THE

AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

APRIL, 1901.

PRIMARY SPLENOMEGALY.

WITH A REPORT OF THREE CASES OCCURRING IN ONE FAMILY.[1]

By N. E. Brill, A.M., M.D.,
OF NEW YORK.

The cases which are about to be reported here are, in addition to their extreme rarity, noteworthy because their subjects have been under my observation for over fifteen years. I have refrained from publishing them earlier, since no scientific results could be obtained from a mere description of their clinical histories. I had long considered them unique and knew of no other cases in the literature just like them. They are now recorded so as to supplement the valuable contribution to *splenomegalia primitiva* made by David Bovaird, Jr., in a recent number of The American Journal of the Medical Sciences (October, 1900), in which he describes two similar cases.

These cases reveal a family form of primary splenomegaly all developed in one generation. On this account the *family history* of these patients is important.

The mother of my patients is in her sixty-second year, in perfect health. The father died last year, under my care, of pneumonia. Of the maternal parents (the grandparents of the patients), the father died at seventy-two years, likewise of pneumonia, under my observation; the mother at thirty-eight years, in childbirth. Of the paternal parents, the father is said to have died of gallstones at seventy-three years; the mother died last year, at ninety-four years, of shock due to a fall down stairs, while under my care. In none of them who were under my observation was there any enlargement of the spleen or liver.

As far as inquiry as to the great-grandparents of our patients goes, an accurate report can be furnished only as to those on the maternal

[1] Two of the patients were presented at the meeting of the Society of Alumni of Bellevue Hospital, November 7, 1900.

side. The great-grandfather died of an apoplexy at eighty-five years, the great-grandmother of an acute disease of one week's duration. On the paternal side the great-grandparents died, it is said, of old age.

The mother of my patients gave birth to six children. Of these the eldest is in perfect health and is the mother of two healthy children. The second child died at the age of three years, of chronic diarrhœa and marasmus. The third is one of the cases here reported. The fourth is in good health. The fifth is the second of the cases here described. The sixth died at the age of nine years, of an enlargement of the spleen, and furnishes the third case of this disease.

I had not the fortune to see the last child, whose death occurred before my introduction professionally into the family. Trustworthy accounts tell of the life of this boy, which was one of suffering after the third year from birth. The child was slow and lacked energy, but was not at all mentally backward. The mother noticed its inability to run and play like other children of its age. She likewise noticed an increasing fulness of its abdomen, with a commensurate increasing languor and indisposition to make any effort. According to her statement, the nature of the disease was unknown to the physician first consulted. Toward the end of his short life all the physicians agreed that there was an enormous enlargement of the spleen. The abdomen enlarged greatly; the child became weaker, its skin became yellow and shrivelled, and finally the child could no longer walk, and died of asthenia.[1]

Dora W., the third child, is thirty-four years old, married; has had no children and no miscarriages. She has been under my observation since 1885. I am told she had none of the ordinary diseases of childhood. She had always been healthy, energetic, and almost tireless in her social duties. She was married in 1888. She never had malaria, rheumatism, tuberculosis, or rachitis.

Before her marriage I had no occasion to make a physical examination of her. She did not note anything unusual about her condition until about this time, but was convinced shortly after her marriage that there was an enlargement of the abdomen under the ribs on the left side, where there was a firm mass, which occasioned no discomfort whatever.

On examination I found a spleen which extended from the lower border of the eighth rib above to three finger-breadths below the costal margin and almost to the parasternal line. The liver was not enlarged. There were no enlarged lymphatic glands. All the thoracic organs were normal.

A relative estimation of the proportion of white to red cells of the blood was made according to the methods then in vogue, when but few blood-counts were made in America, and revealed what I believed to be more white cells in the field than was normal. The diagnosis of leukæmia was made and subsequently corroborated by a prominent consultant. Both of us gave a bad prognosis.

After treating the patient for about two years, and there being no reduction in the size of the enlarged organ, the patient sought other advice and treatment. While under my care she was treated with

[1] Since writing this I have had a communication from the physician under whose care the child had died, Dr. L. Schöney, who corroborates these data and says that no examination of the blood had ever been made in the case.

iron, quinine, and arsenic. I did not see the patient again professionally until 1895, when she gave me an opportunity to examine her again. During this period the spleen had increased considerably; its anterior border extended further forward toward the mesial line. A notch was distinctly felt midway between the umbilicus and the lower border of the ribs. The limit of growth forward was in the mesial line midway between the umbilicus and the pubes.

She informed me that while under the care of a colleague she had been treated with continued large doses of quinine and arsenic, also with methylene-blue, with injections into the spleen of pyoktanin, ergotin, and arsenic, with cataphoresis with these drugs, with electrolytic puncture of the spleen, and with galvanism over the organ.

Between these years she had two attacks of pleurisy, with effusion of a clear, yellow serum. She also developed a tendency to sweating, with sudamina, which culminated in the summer of 1895 in a most severe attack, which persists on varying occasions to this day. In 1896 the sudamina assumed a tendency to be hemorrhagic and finally changed to what the patient called a "crop of blood-boils." Up to this time there had been no indications of any hemorrhagic tendencies. She had normal menstrual periods of normal amounts.

The first systematic blood examination was made by me in 1895, with the following result: Red cells, 4,800,000; white cells, 7168; hæmoglobin, 80 per cent. (Gowers' instrument).[1]

In 1896 I treated the patient for an attack of typhoid fever, which went through an ordinary course without complications; the attack lasted six weeks. It is worthy of note that during her typhoid the spleen, which had been previously hard and tense, was much softened, but no larger than it had been one month before (July, 1896) when I had examined it. After this, however, marked changes in the physical condition occurred, and a detailed description is important to show the steady progress in the disease and the development of new symptoms.

Status of the Patient Two Months after the Typhoid Convalescence (December 14, 1896). The patient is a small woman of small osseous development. The skin has now a peculiar yellowish hue (not like icterus), with a tendency to shrivel like the skin of an old woman. It is marked by dark pigmented spots sparsely scattered over the trunk and extremities, most numerous on the anterior surface of the right leg. These are the residua of a crop of hemorrhagic furuncles. There are no glandular enlargements to be felt anywhere. The tonsils are rudimentary. The gums are a little spongy and inclined to bleed. There is no marked pallor to the visible mucous membranes. Over the sclerotic of each eye is a wedge-shaped patch, yellow in color (the rest of the sclera is white), which extends from the corneal margin, where its base is 3 mm. broad, toward the canthus of each eye for a distance of 0.5 cm. These do not look like pingueculæ.

The shape of the trunk is peculiar, the lower part of the thorax and upper part of the abdomen being enlarged in all directions, the greatest

[1] It is my opinion that Gowers' hæmoglobinometer is over-standardized, and that the hæmoglobin of these patients' blood is higher than the figures given. The writer has found that the hæmoglobin percentage of blood in healthy people with high color often falls below the 100 mark of this instrument.

circumference being at the level of the umbilicus. This region is distinctly round, the antero-posterior diameter being fully as large as the lateral.

Respirations, 28; pulse, 80.

Lungs. At both bases there are diminished breathing and diminished voice-sounds, due to pressure upward of the spleen and liver.

Heart. Apex-beat at the lower border of the fourth rib, one inch to right of nipple. Upper border of cardiac dulness at the upper border of the third rib, right border at midsternal line. There are no cardiac murmurs.

Liver. Somewhat enlarged. The upper border is just below the fourth rib; lower border 3 cm. below the free costal margin, in the mammillary line. The entire region is tender to pressure.

Spleen. The anterior border is round, sharply demarcated, and presents a large indentation, the notch 2 cm. to the left of the middle line and 2 cm. above the umbilicus. It extends downward over the bladder to 4 cm. above the right pubic spine, where it curves, to be continued with the posterior border, which emerges into the abdomen at about the crest of the ilium. The spleen is very tense and firm; its surface has no irregularities or nodules and is uniformly smooth. The upper border of splenic dulness is over the seventh rib, in the axillary line.

The veins of the skin of the abdomen are not very prominent. The lower abdomen protrudes.

The uterus is crowded downward and backward.

The urine is acid, 1012 specific gravity, and contains no albumin, no casts, no bile, and no sugar.

The blood-count shows red cells, 3,800,000; white cells, 6400; hæmoglobin, 65 per cent. (Gowers).

This examination of the blood shows a reduction in the number of red cells as well as the hæmoglobin from the previous one. The slight simple anæmia manifests itself in the pallor of the skin.

A qualitative count of the white blood-cells showed multinuclears, 65 per cent.; large mononuclears, 5 per cent.; small mononuclears, 30 per cent. There were extremely few eosinophile cells.

There was no poikilocytosis nor were there any nucleated red cells.

A thorough course of mercurial inunctions and internal administration of sodium iodide was instituted, but with no effect on the splenic enlargement.

After this the spleen grew gradually and quickly in size in all directions, and the liver but slightly. The detailed descriptions of the conditions found in my various examinations during the next three years are unnecessary and would be tiresome to the reader. It is important to state, however, that the blood showed at no time any marked qualitative change from the normal limits of red and white, there being a slight tendency to leukopenia, the highest number of white cells being 6144, the lowest 4200. The hæmoglobin remained about 75 per cent., the variations being from 65 to 80 per cent. (Gowers). At no time was there any qualitative change present in the red or white cells indicative of any serious form of anæmia.

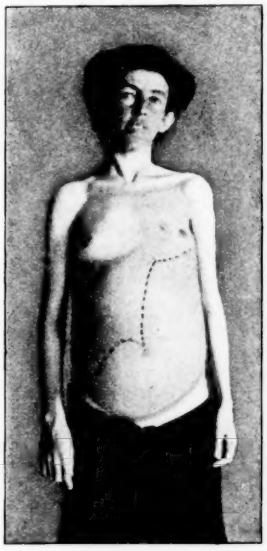
During these years the patient suffered occasionally with dyspnœa, pain in the right ankle and leg. There was no tenderness over any of the bones at any time. She also was troubled with numbness in the

finger-tips, though examination revealed no objective disturbances of sensation to pain, touch, or temperature.

The notes of my last examination bear the date of October 4, 1900. The abdomen is more protuberant; the upper border of the splenic dulness is on the fifth rib. The posterior border of the spleen can be distinctly felt on palpation. It extends along the vertebral column from the last rib above to the crest of the ilium below. In front it extends into the pelvis, and its anterior border in the lower third extends across the abdomen, there being but 0.5 cm. between it and the right superior spinous process of the ilium. The lowest part of the spleen fills the pelvic cavity.

FIG. 1.

FIG. 2.



The cross to the right of the nipple shows the position of the apex of the heart; the dotted lines indicate the upper and anterior limits of the spleen.

The liver is crowded somewhat upward, the upper border of dulness being in the third interspace, the lower border 6 cm. below the costal margin, in the mammillary line.

The circumference of the abdomen has increased markedly. There is tenderness over both spleen and liver. The general features are much better shown in the accompanying photographs than by any description. (See Figs. 1 and 2.)

The color of the skin of the patient is a peculiar brownish-yellow, nothing like an icteric skin, however; her mucous membranes are pale, yet her blood shows 4,200,000 red cells, 7168 white cells, and the hæmoglobin is 70 per cent. The differential count of the leucocytes

is: Polynuclear, 56 per cent.; large mononuclear, 8 per cent.; small mononuclear, 35 per cent.; eosinophile, 0.75 per cent.

The patient states that she feels very well, better than at any period since 1895, yet emaciation is growing pronounced.

The apex-beat is in the third interspace, 3 cm. to the right of the left nipple, and the upper border of cardiac dulness is at the upper border of the second rib.

The abdominal and thoracic superficial veins of the skin are more prominent.

During the past year there has been at infrequent occasions a tendency to bleed from the gums, the blood oozing from the surface, which is somewhat spongy. There have been no hemorrhages from any of the other mucous surfaces or from the kidneys.

At no time was the plasmodium malariæ ever present in her blood, which was frequently examined, nor were there ever any nucleated red cells or a poikilocytosis. The largest number of red cells was 4,800,000, the smallest 3,800,000; the highest hæmoglobin percentage was 80, the lowest 65. Considering that the patient is a woman, the hæmoglobin percentage is not much less than normal, though recently a tendency to an anæmia of the chlorotic type is manifest.

There has never been any œdema of the feet or legs, nor of the skin anywhere, and no ascites.

The body temperature has always been normal and never was higher than 99° for the evening temperature.

Maximilian R., the third patient, is thirty years old. He is married and has a healthy boy, aged one year. He has been under my observation since 1885. He had most of the infectious diseases of childhood at various times up to his ninth year, including measles, whooping-cough, chicken-pox, and scarlet fever. He was not robust until after his ninth year, when he gradually developed into a sturdy boy. He is in the tobacco business and never missed a day from business on account of illness until the past summer. He has never had malaria, rheumatism, gonorrhœa, syphilis, rachitis, or tuberculosis.

Up to 1889 there was no splenic enlargement; he had been examined frequently by me during these years in the course of a number of attacks of bronchitis.

After learning that his sister had an enlarged spleen, and knowing that his youngest brother had died about seven years before with a similar disease, he came to me in March, 1889, for an examination. The result was as follows:

The patient was a well-nourished, thick-set young man, with good color, short in stature, and muscular. His general appearance indicated health. Across his nose and on either side of the cheek was an erythematous patch, with a few red papules. His skin was moist and covered with sudamina. He says he perspires very freely at all times. Pulse was 76 and strong; respirations, 20. He had no complaints of any kind and asked for an examination to determine whether he had, as he called it, a spleen, meaning an enlarged spleen. The thoracic organs were perfectly normal.

On palpating his abdomen the edge of the spleen could be felt, on deep inspiration, with the fingers well under the costal arch; percussion, however, showed dulness in the post-axillary line at the lower border of the seventh rib, which I took to be the upper border of the

spleen. The spleen was evidently enlarged upward. There was no increase in the relative proportion of white to red blood-cells.

The patient was immediately put on arsenic, which apparently produced a diminution in the size of the spleen, for my notes of April, 1890, show that the upper border of splenic dulness was in the eighth interspace, in the post-axillary line. In July, 1890, he consulted me about frequent epistaxis, occurring every few days, and about the erythema on his nose and face. The upper border of splenic dulness on this occasion was on the ninth rib; a still further reduction in the size of the organ. No blood examination was made on this occasion.

He was informed of the necessity of keeping up with his Fowler's solution and reporting to me occasionally. After this I saw the patient very seldom, as he felt in perfect health and entered upon an active business career. He visited me about twice yearly.

In August, 1893, he came again to me, complaining once more of frequent epistaxis, and with a still more vivid erythema of the nose and face. He had in the meantime consulted numerous dermatologists about the inflammation of the skin over his nose and cheeks, but without benefit. On this occasion he had an attack of nose-bleed in my office, and I found on rhinoscopic examination a general surface oozing from the nasal mucous membranes. This was controlled by packing with styptic cotton. On examining his abdomen I discovered the splenic edge to be distinctly palpable a trifle below the free border of the ribs. The upper border of splenic dulness was again over the lower border of the seventh rib, as it was in March, 1889. He told me he had been careless about taking his arsenic, which he had not taken at all for a long time.

A blood-count on this date showed red cells, 5,400,000; white, 7168; hæmoglobin, 90 per cent. (Gowers). No plasmodium malariæ was present in three successive examinations made during the week.

The urine was light yellow; specific gravity, 1014; acid; no albumin, no casts, no sugar; urea, three grains to the ounce; sediment of triple phosphates and urates. There was still profuse perspiration and sudamina covered the skin.

From this time on the patient consulted me frequently and took his arsenic conscientiously, yet there was no diminution in the size of the spleen, nor was there any increase. As with his sister, a systematic course of mercurial inunctions and the administration of large doses of iodides were given, but with no effect on the organ.

During this period and for the next four years he considered his health to be perfect, his only complaints being an occasional epistaxis and the erythematous patch on the nose, with troublesome sudamina, especially in the summer months.

Periodical blood examinations, the details of which would be tiresome, showed the lowest number of red blood-cells, 4,200,000, with hæmoglobin at 80 per cent. (September 21, 1896); the highest, 5,400,000, and hæmoglobin at 90 per cent. (February 24, 1897). The lowest number of white blood-cells was 5632, the highest 8292. The differential count of the white cells during these years showed a normal percentage of polynuclears, large and small mononuclears, and eosinophiles.

During this period of four years he was treated with a number of drugs, including various preparations of iron, muriate of quinine in large doses, sodium and strontium iodide, ergotin, and mercury. He

kept fairly well to his arsenic and iron, and the spleen apparently showed no further enlargement. Being informed of this he married in 1897. During 1897 and the early part of 1898 he gained constantly in weight and looked the picture of health. From May, 1898, the spleen began to increase again in size and continued to increase, which it is doing even at the time of this writing, with a period of very rapid growth since the beginning of May, 1900. Numerous blood examinations were made during this period in which not even an anæmia of chlorotic type could be established, as the hæmoglobin was never lower than 80 per cent. Since October, 1899, yellowish, cuneiform, thickened patches of conjunctiva, similar to those of the sister, developed in each eye, the size of the patches being identical. The color of the healthy sclera is white. The patient is diminishing in weight, yet he says he feels perfectly well. In fact, he was very active in his business during this period, making trips into the country and out West, where he was compelled to rough it and live on all kinds of primitive food.

At no time were there any abnormalities in the urine.

With the enlargement of the spleen the liver kept pace, both pushing upward against the lungs and forcing the heart upward and to the right.

No enlarged glands can be felt anywhere. With the exception of an attack of indigestion in January, 1900, he did not require any medical service.

In August of this year, while at Avon, N. J., where he had spent the past two summers, he was seized with a chill, his temperature speedily rose to 106.5° F., and he became delirious. During this attack he was treated by the local physician, who pronounced his disease, according to the patient's statement, as "bloody dysentery." I was informed that the patient had numerous loose evacuations from the bowels containing blood and mucus. He was greatly weakened and emaciated by this attack, which was followed during convalescence by an attack of hemorrhagic furunculosis similar to the one which followed the attack of typhoid in the sister, the signs of which are still visible in the pigmentation of the skin wherever there had been a furuncle. On his return to the city he consulted me, when a physical examination revealed the following:

Status on October 3, 1900. There is considerable emaciation. The skin of the face, especially on the forehead, shows pigmented spots and a few healing hemorrhagic furuncles. Pigmented spots most marked over anterior surfaces of the legs. A few hemorrhagic furuncles are on the outer side of the left leg and thigh. A few pigmented spots on the chest, abdomen, and arms are seen. The color of the skin is a sort of brownish-yellow, not at all like icterus, very peculiar and different from any appearance of cachexia that I have ever seen. It is not the pallor of any of the forms of anæmia or of carcinomatosis. There is no pigmentation of the mucous surfaces of the lips, gums, or mouth. The tonsils are not large, and there are no enlarged lymphatic glands anywhere to be felt. The skin of the nose and of the adjacent sides of the cheeks is still livid red, and sudamina are distributed generally over the surface of the body, which is moist. No pain or tenderness can be elicited by pressure over the bones.

The shape of the patient's trunk is more anomalous than ever, the bulging in the regions of the liver and spleen being much more pro-

nounced, giving to his entire trunk the shape of a barrel. His chest is thirty-four inches in circumference, his upper abdomen thirty-seven and a half inches, and the lower, at the waist, thirty-three inches (Fig. 3). Pulse, 100, soft, and shows no increased tension The respirations are hurried, 30 to the minute, short, and somewhat labored. (He never had dyspnœa before.) This is due partly to the pressure of the enlarged organs upward, but greatly to the anæmia, which the examination of his blood will later show.

The apex-beat of the heart is in the *third interspace*, 3 cm. to the right and above the nipple. The upper border of cardiac dulness is at the lower border of the first rib, the right border over the middle of the sternum. The beat is fairly forcible. There are no cardiac murmurs.

FIG. 3.

FIG. 4.

The lungs show marked dulness from the fifth rib downward, with diminished breathing and absent voice. There is no fluid in either pleural sac. The dulness is due to the compression.

The abdomen protrudes in front, the sides above bulging to a great extent. There is marked tenderness over the liver in spots and a similar tenderness over the spleen, especially below the costal margin.

The area of splenic dulness begins above, at the upper border of the fifth rib, in the midaxillary line, and can be traced behind to the spinal column (Fig. 4), which it touches at the seventh dorsal vertebra.

The posterior edge of the spleen can be distinctly palpated below the twelfth rib, where it rests along the lumbar vertebra, and then curves forward to be finally lost to the touch behind the crest of the ilium. In front the anterior edge of the spleen emerges from the costo-chondral border in the parasternal line and proceeds downward and toward the mesial line, which it reaches at 3 cm. above the umbilicus, where it presents a distinct notch; from the notch the border proceeds transversely across the mesial line of the abdomen, bends down suddenly and curves 4 cm. beyond the middle line back again to the lateral part of the iliac region, where it meets the posterior border behind the crest of the ilium. The accompanying photograph, with the borders of the organ marked on the skin being mapped out by palpation and percussion, shows the enormous size of the organ better than a description (Fig. 4).

The liver dulness begins above in the mammary line, in the fourth interspace; the lower border of the liver can be easily felt; it extends to 6 cm. below the costal margin in the same line and 8 cm. in the anterior axillary line. It distinctly bulges out the right lower thoracic and upper hypochondriac regions.

The surfaces of the spleen and liver are uniformly smooth and present neither nodules nor irregularities. There is no ascites, nor has there been any œdema anywhere.

The superficial veins of the abdomen are not unduly prominent.

The urine is normal in amount; its color is yellow, specific gravity, 1020; urea, four grains to the ounce; no albumin, no casts, no sugar, no bile; some indican.

The blood examination reveals a considerable reduction from former examinations in the red cells and in the hæmoglobin. Red cells, 3,800,000; white, 5,120; hæmoglobin, 55 per cent., showing an anæmia of chlorotic type. The differential count shows polynuclear neutrophiles, 54 per cent.; large mononuclears, 10 per cent.; small mononuclears, about 36 per cent. (a little less), and eosinophiles, 0.25 per cent. There were no nucleated red cells, no poikilocytosis. A very few microcytes were visible.

There has been no fever since the third day after his chill, in August, 1900.

Diagnosis. The distinctive features of the last two cases are—

The enormous enlargement of the spleen, that of the sister being larger than that of the brother.

The enlargement of the liver, that of the brother being the greater.

The profuse perspiration and sudamina.

The *absence* of anæmia for more than ten years after the disease had been established.

The tendency to hemorrhage, manifested in the occasional oozing of blood from the gums in the sister, in an occasional epistaxis in the brother, and in the attack of hemorrhagic furunculosis in each.

The peculiar brownish-yellow (non-icteric) color of the skin.

The long duration of time since the disease began.

The feeling of comfort and ease, notwithstanding the enormous size of the spleen and the pressure upon the thoracic viscera.

The yellow, wedge-shaped conjunctival thickening on each side of the cornea of each eye; these do not in either case look like pingueculæ.

This complex of symptoms, it will be shown, is sufficient to exclude these cases from the group of cases of splenic anæmia and justify placing them in a special group.

Chronic enlargement of the spleen is not rare. In fact, in malarial districts of the Southern States it is quite common and is familiarly known there as the "ague-cake." In such cases it seems to bear a direct relation to the intensity and virulence of the malarial infection.

It also occurs in interference with the portal circulation either directly, such as in cirrhosis of the liver, portal thrombosis, continuous pressure on the portal vein from any cause, etc., or indirectly through the interference with the venous circulation as a result of cardiac disease.

It occasionally occurs as a manifestation of syphilis, rachitis, and tuberculosis.

Amyloid disease of the spleen produces a considerable enlargement of the organ. It is the secondary consequence of suppuration in some other part of the body. Enlargement accompanies leukæmia, Hodgkin's disease, and occurs in splenic anæmia. It is also due to abscess and echinococcus invasion of the spleen.

Lastly, a chronic enlargement of the spleen occurs, with new growths arising in the organ either primarily, which is uncommonly rare (primary carcinoma or sarcoma has seldom been observed), or secondarily from metastasis from other organs (even secondary carcinoma or sarcoma is quite uncommon).

In our cases we have been unable to determine to what the splenic overgrowth is due. From the clinical history malaria, rachitis, tuberculosis, and amyloid disease can be eliminated. The absence of fluctuation determines that the enlargement is not an echinococcus cyst. The duration of the disease excludes all the forms of malignant neoplasms. The absence of heart disease and of primary cirrhosis of the liver excludes a hyperplasia due to passive congestion, as does the tremendous size of the spleen in our cases. Banti's disease, which is a cirrhosis of the liver accompanied by a splenomegaly, is entirely unlike this group. The result of the blood examinations positively excludes leukæmia.

Cases of splenic anæmia have much in common with our group of cases and yet, I think, are very distinct. The features in common are the splenic enlargement, the occurrence in adult life, the chronicity of the affection, the hemorrhagic tendencies, and, perhaps, the anæmia. In splenic anæmia the duration of the disease is much shorter than in our group. In the former the average length of life after the discovery of splenic enlargement is two years; in the latter it has not as yet been determined, but two of my cases present a prolonged progres-

sive splenic overgrowth, in one for at least eleven years, in the other for fifteen years, the patients being still in a fair condition of subjective health. Osler[1] has reported a case of splenic enlargement and anæmia which lasted at least twelve years, and which was accompanied by a high degree of anæmia of the chlorotic type and by repeated attacks of melæna and hæmatemesis. The spleen was not nearly as large as in that of any of my cases.

Anæmia is not a marked symptom in our group and began very late, only after an intercurrent affection, while it is an early and prominent symptom in the patients with splenic anæmia. Still, it should be mentioned that Osler says that anæmia was more commonly absent in his cases of splenic anæmia (THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1899, p. 54) than present (Osler, *Text-Book on Practice of Medicine*, article "Splenic Anæmia"). This fact might make some of his cases analogous to ours.

Patients with splenic anæmia have been at times amenable to treatment. Our patients have grown progressively worse, notwithstanding all methods and means of treatment.

The peculiar color of the skin in our cases is entirely different from the pallor of splenic anæmia.

I cannot say whether the peculiar conjunctival changes are pathognomonic of our group. I have never seen them mentioned as occurring with other forms of splenomegaly, nor have pingueculæ been described as occurring in such cases.

Quite characteristic of our group of cases is the feeling of comfort and well-being and the remarkable absence of any subjective signs of distress, even with the enormous overgrowth of the spleen and liver crowding up the thoracic viscera.

LITERATURE AND PATHOLOGY. When one comes to examine the literature connected with cases of primary splenomegaly he soon discovers the darkness in which the pathology of the spleen is concealed. The various non-leukæmic splenic enlargements have been variously denominated according to whether they were considered as heteroplastic growths or as a hyperplasia. The confusing nomenclature regarding the nature of primary splenomegaly arose partly from the various theories held by the different authors. Cases thus appear in the literature under the lymphatic tumor groups with the following various names: Lymphosarcoma (Virchow), malignant lymphoma (Billroth), malignant non-leukæmic lymphadenoma (Orth); also as Hodgkin's disease, adenie (Trousseau), pseudoleukæmia (Cohnheim), lymphatic anæmia (Wilks). Even the term splenic anæmia has been used to denote various conditions. Thus Griesinger, in describing a splenic form

[1] Edinburgh Medical Journal, May, 1899.

of pseudoleukæmia, called it splenic anæmia. He used the term for the first time. He was followed by others who gave the same name to cases of splenic enlargement in which there was no involvement of the lymphatic glands. A different significance was given to this term when von Jaksch described a series of cases occurring in children presenting the clinical complex of anæmia—intense leucocytosis, very large spleen, and, seldom, enlarged lymphatic glands. He called these cases "anæmia pseudoleukæmia infantum," while Somma had called the identical class of cases splenic anæmia. Glockner classified the same kind of cases under the same term as Somma. In describing his cases the last author speaks of the presence of numbers of peculiar epithelioid cells in the spleen pulp—a condition which Bovaird also described under different terms in his case and whose interpretation has puzzled all pathologists who have described these cells. They have not been able to say definitely whether the cells represented a neoplastic formation or not. Such authorities as Robin, Weichselbaum, Birch-Hirschfeld, and others have been unable to decide the question.

The only cases heretofore recorded which the writer believes are similar, if not identical, to his cases are six in number. They are described by Gaucher,[1] Picon and Ramond,[2] William Collier,[3] Weichselbaum,[4] and Bovaird.[5] The last named, in his recent article, has referred to these cases so fully that it is needless to reconsider them.

I think it is fair to assume that the child, the youngest of my three cases, who died at nine years of age with a splenic enlargement, was a case of this disease. If we can accept the case of Weichselbaum—one of a soldier from whom a very large spleen, which followed an injury to his side, was removed by operation, and which Birch-Hirschfeld regarded not as an endothelial sarcoma, as Weichselbaum called it, but an ordinary large-celled hyperplasia—as one of this disease, his and mine are the only cases recorded as occurring in males, the cases of Gaucher, Picon and Ramond, Collier, and Bovaird being in females.

Females seem to be more afflicted than males. Collier and Bovaird each report two females in each of their reported families as afflicted with the disease, while my cases are three in one family, two of them being males. The disease, perhaps, has a relation to some perversion of visceral development occurring in families.

The time of development of the disease in this group varies. In

[1] E. Gaucher. Thèse de Doctorat: "Splenomegalie primitive—Epithelioma primitif de la rate."

[2] Picon et Ramond. "Hypertrophie de la rate." Arch. de méd. exp. et anat. path., 1896, viii., 168.

[3] William Collier. "Case of Enlarged Spleen." Transactions London Pathological Society, 1895, xlvi., 148.

[4] Weichselbaum. "Primäres multiplen Endothelsarkom der Milz." Virchow's Arch., 1881, lxxxv., 562.

[5] David Bovaird, Jr. THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1900, cxx., p. 377.

one of my cases (in the child who died) it evidently began in the third year of life. In the woman it cannot be definitely stated when it began, because no physical examination of the abdomen had been made until the enlarged spleen was apparent to her; it may be presumed, however, from the size when it was first discovered and its subsequent progress in growth that it began about three years before, in her nineteenth year. In the man it positively did not begin until his eighteenth year. In this respect two of my cases differ from Bovaird's; in both of his it began in early childhood. It likewise began in childhood in Gaucher's case.

It is not my intention to discuss the pathological anatomy of this group of cases. The subject is still involved in doubt. Bovaird's experience with his specimens and the various opinions expressed by the pathologists to whom he submitted them is but a repetition of the experience of Collier, Weichselbaum, etc. None could say absolutely whether Bovaird's case represented an endothelioma, in the ordinary acceptation of the term, or a hyperplasia. This doubt shows the difficulty of the problem.

From a clinical stand-point I may say that this affection of the spleen does not produce any serious altered blood states such as one would be led to expect in a destructive process involving the cells of the spleen. Morphologically the spleen in these cases is still a spleen, and histologically the cell elements were much increased in number, giving rise to a true hyperplasia—conditions which are borne out by the clinical phenomena.

As to the increase in the size of the liver in these cases, the explanation is based on purely physical grounds. I do not regard it as metastatic, notwithstanding in Bovaird's case the same kind of cells which had been found in the spleen were found in the liver. Clinically, the increase in size is that of an ordinary hyperplasia. When we consider that in my cases the hepatic enlargement was not coincident with but later than the splenic overgrowth, and that it occurred some years later in both the adult cases, we must look to the cause of the enlarged liver in the spleen. The following facts will, I believe, explain it:

1. All the venous channels in the spleen were enlarged in Bovaird's case, and it is fair to assume they are in mine.

2. With the increase in the size of the spleen more blood is sent to it, and consequently more is returned from it through the splenic vein. As a consequence—

3. More blood is carried to the portal vein, which is formed by the junction of the splenic and superior mesenteric veins. Hence the liver receives more than its natural portal blood-supply, the hepatic cells are put to greater activity in the necessary metabolism of this increased blood-supply, and a hypertrophy and finally a hyperplasia naturally

result. An analogous process occurs in the spleen in some cases of cirrhosis of the liver just in this way.

From what has been adduced it may be held that my cases correspond only with those described by Gaucher, Picon and Ramond, Collier, Weichselbaum (even doubtful), and Bovaird. While there is a similarity between the cases called splenic anæmia and some of this class reported by Sippy[1] and Osler, there are sufficient data to include our group of cases under a special class.

Gilbert and Fournier[2] mention seven cases of children with splenomegaly accompanied by cirrhosis of the liver and speak of them as cases of splenomegalic hepatic cirrhosis. They call attention to the stunted growth of the patients and to certain changes in the bones and joints.

Frederick Taylor[3] reports three cases similar in most of their features to those of Gilbert and Fournier. These cases while having much in common are yet not alike; some of the former seem to me to be cases of splenic anæmia and of Banti's disease. This is especially true of the first two of Taylor's cases, which are undoubtedly cases of Banti's disease. As to his third case, it approaches in only a few characters the group in which my cases form a distinct division and yet differs in many of its clinical features from mine. My cases were not stunted in growth, had no clubbing of the terminal phalanges, had no ascites, and no icterus. The peculiar color of the skin in my cases was of very late development, came on gradually, and increased in intensity slowly. There never was any bile in the blood or in the urine of my patients and their stools were never free from bile. On this account I do not regard their color as icteric. It does not look like any form of icterus that I have ever seen. The third case of Taylor's was jaundiced shortly after an attack of scarlet fever at the age of about eight years, after which his splenomegaly began and presented the signs of arrested development just mentioned. The spleen in my cases is larger than in any of the cases referred to.

There has recently been a discussion before the Société Médicale des Hôpitaux (April 1, May 2, 18, and 25, 1900) of cases of splenomegaly some of which were associated with a cirrhosis of the liver and some were not. M. Chauffard, in opposing the position taken by M. Gilbert on this topic, suggested the classification of such cases into three groups, viz.:

1. Cases in which the spleen and liver appear to be simultaneously affected and in almost equal degree. He suggests the name of splenomegalic hypertrophic biliary cirrhosis for this class.

[1] THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, November, 1898.

[2] Gilbert et Fournier. "La cirrhose hypertrophique avec ictére chez l'Enfant." Revue mensuelle des Maladies de l'Enfance, 1895, No. xiii., p. 309.

[3] Frederick Taylor. "Cirrhosis of the Liver in Children." Guy's Hospital Reports, 1895, lii., p. 45; also 1897, liv., p. 1.

2. Cases in which the spleen is distinctly and markedly affected before the liver and to a much greater degree. In these cases the hepatic changes are secondary and dependent on the splenomegaly. He would call these cases metasplenomegalic hypertrophic biliary cirrhosis.

3. Cases in which the enlarged liver precedes and determines the splenomegaly—"presplenomegalic hypertrophic cirrhosis."

These French authors, however, have confounded the various types of disease which we speak of as hæmochromatosis (v. Recklinghausen), Hanot's disease, and diabète bronzé with some cases of splenic anæmia, and cirrhosis of the liver combined with splenomegaly (Banti's disease). I do not think any of their reported cases are like mine.

Nothing is gained by a classification such as M. Chauffard suggests, as it neither indicates the character, cause, or pathology of any of the diseases of the groups.

I can furnish no further explanation of this affection, and all that can be said about this special class of cases is that they represent probably a family disease whose essential characteristic is a progressive splenomegaly. When the physiology and pathology of the spleen become known it may be possible to refer this class of cases to its proper place in medical nosology.

ENTEROPTOSIS.[1]

By James R. Arneill, M.D.,
Instructor in Clinical Medicine, University of Michigan.

The ptoses of the different abdominal viscera are so closely associated, forming, as they do, parts of one great disease picture, that it is unscientific and unsatisfactory to select for discussion one dislocation, such as gastroptosis or nephroptosis, and thrust upon it, as is sometimes done, the dignity of a special disease. It is usually but one manifestation of enteroptosis. Almost never do we find gastroptosis without a dislocation of one or both kidneys, the colon, and the small intestines. Often there is also dislocation of the uterus, less frequently of the liver and the spleen. It is true that the symptoms and anatomical signs on the part of the stomach may predominate in one case, while in another those of the kidneys are the more striking. It is also true that though these organs may be greatly dislocated, the patient may complain of no symptoms that would direct special attention to them.

My experience with this condition during the past few years has con-

[1] Read before the Detroit Medical Society, January 23, 1901.

vinced me that it is a remarkably common disease, that it is very seldom recognized or examined for by the profession at large, and that a dissemination of knowledge of the disease would be of great worth to the profession and of untold value to suffering womanhood.

There is no disease of more importance to the general practitioner than enteroptosis, since it is endemic the world over, and he is usually first to be consulted by such patients. A familiarity with its symptom complex and a knowledge of the correct methods of diagnosis will relieve him of much worry and vexation of spirit by explaining many an obscure problem in practice.

The patients who are an easy prey to the allurements of patent medicines and quacks are often enteroptotics. They are well described in a patent medicine advertisement as flotsam and jetsam, driftwood —the patients who drift from one physician's office to another; who go the rounds of hospitals and finally give up in despair, reconciled to the belief that treatment of their condition is useless. This class of cases is the bane of the physician's life—the atonic, enfeebled, ill-nourished patients, so poorly equipped with vital force that every physiological function from digestion to thought is seriously impaired. The patient is literally and figuratively run down, as much so as a clock when its mechanism no longer furnishes the impetus to go. These are the cases which every day are being diagnosed as neurasthenia, spinal anæmia, nervous exhaustion, nervous dyspepsia, and change of life.

In this article I shall confine myself rather closely to a statement and discussion of the facts gleaned from an analysis of eighty cases of enteroptosis taken from the records of the medical clinic. I shall avoid citations from numerous authors and shall give but a brief history of the disease.

History. In 1853 Virchow called attention to the displacements of the intestines which arise through circumscribed peritonitis and obstruction of feces. While working upon diphtheritic dysentery he was struck with the frequency of the dislocation of the abdominal viscera. Indeed, his post-mortem experience led him to make the following statement: "In almost all adults partial states of dislocation of the viscera, and especially of the intestines, occur so frequently that more people have this displacement than a normal location of the intestines."

The intimate relation existing between a large group of symptoms and dislocations of the abdominal viscera entirely independent of inflammatory conditions in the abdominal cavity was first brought prominently before the medical profession by Glénard, of Lyons, France, in 1885. Although other clinicians—Stiller, for instance—claim to have been familiar with these cases long before the publication of Glénard's article, he is given credit for having given to enteroptosis the dignity of a distinct disease. Thus we may distinguish the enterop-

tosis of the clinician and the enteroptosis of the pathologist. Glénard devoted considerable attention to the *modus operandi* of the development of enteroptosis, to the explanation of symptoms as secondary to the anatomical conditions and to treatment. Ewald and Boas proved that the "cord colique tranverse" of Glénard was simply the normal pancreas, which is sometimes easily felt in these cases. Einhorn and Hemmeter have called attention to the frequency of enteroptosis in patients complaining of dyspeptic symptoms.

Meinert examined a large number of chlorotic girls and concluded that enteroptosis was a prime cause of chlorosis.

Stiller in particular has called attention to congenital enteroptosis and has emphasized the nervous element in this condition. In important contributions he has called the attention of the profession to a new sign, which he terms the costal stigma, or floating tenth rib. All patients possessing this sign are considered neurasthenic. He believes that the degree of movability of this rib is a fair index of the degree of neurasthenia. He believes enteroptosis and nervous dyspepsia to be identical and uses the costal stigma as an easy means of recognizing both. He contends that Reichman's disease is closely related to enteroptosis, accompanies its highest degrees, and depends, as it does, upon a congenital predisposition.

One soon learns to recognize an enteroptotic at a glance. She has a slender frame, is poorly nourished, pale, tired, has a neurasthenic appearance, drags herself about from morning until night, and is entirely lacking in vivacity and energy. Dunster's jocular definition of woman as "a thing which is constipated and has a pain in its side" applies to enteroptotics.

Method of Examination. Chest and abdomen are stripped and a careful inspection made, the patient assuming both horizontal and upright positions. There is usually a depression in the epigastrium and a fulness below the navel, especially in the upright position.

In nearly all these cases palpation is very easy on account of the relaxed condition of the abdominal walls. Occasionally it may be necessary to put the patient in a hot bath at 110° F. to make palpation easier. Feel for the tenth ribs to determine whether the costal stigma is present. Palpate the kidneys according to well-known methods laid down in text-books. Examination of the stomach comes next in my routine. I have found that percussion and auscultatory percussion are entirely unreliable for locating the greater curvature in enteroptotics. If the stomach is in its normal position they are fairly satisfactory, especially the latter method. Frequently, using auscultatory percussion, I have noted a change in the tympanitic note just above the navel, suggesting that this was the location of the greater curvature. Inflation a moment later demonstrated that this was the lesser curvature

in a dislocated stomach. The demonstration of succussion sounds in the region of the navel is very suggestive of a dislocated, dilated, or atonic stomach. The sounds, however, may come from the intestines. Inflation of the stomach by one of the several methods is the most satisfactory way of demonstrating its size and position. Among the methods in vogue is the tartaric-acid and bicarbonate-of-soda method, the patient drinking half a glass of water containing 6 grammes of acid and following immediately with a similar amount containing 7 grammes of soda. Carbonic acid is generated and the stomach is distended.

Another method is inflation through a stomach-tube by means of a Davidson syringe, Politzer air-bag, atomizer bulb, or bicycle pump. Some physicians prefer attaching a French safe or rubber balloon to the stomach-tube, by this means preventing the escape of air either by way of the duodenum or œsophagus. The advantage in this method is that the amount of air introduced into the stomach can be easily controlled. The disadvantage is that the patient, unaccustomed to the use of the stomach-tube, complains of pain before the stomach is fully distended, and in many cases it is necessary to let the air out before determining the position and size.

Spivak, of Denver, recommends auto-insufflation by the patient. A stomach-tube perforated just within the portion covered by the lips is introduced, the distal portion being compressed, and the patient is told to blow. Occasionally the physician applies his own lips to the tube and blows.

My experience with the acid and soda method has been quite extensive and very satisfactory. It will be found much more useful in private practice than the others, since it is much easier to persuade a patient to swallow a couple of doses of medicine than a stomach-tube. Frequently one wishes to distend the stomach when it is inconvenient to give a test-breakfast.

The auto-insufflation method I have never used. From my experience with neurasthenic women I do not believe they would prove successful auto-inflators. Some theoretical objections are offered to the acid and soda method. In some cases of marked dilatation of the stomach it is true that the usual dose is not large enough. In one such case I found it necessary to double the dose in order to obtain good results. Inflation through the stomach-tube is very useful in cases of dilatation. The patient seldom vomits unless the stomach is distended immediately after meals. Some distress occurs, but this is relieved immediately by belching, the patient sticking her finger down her throat if necessary. In the several hundred cases which I have distended by this method neither hemorrhage nor other unfortunate result has followed, and among the cases have been a number with

cancer of the stomach. Transillumination can be used, but it is not as satisfactory as distention.

It is well to palpate the liver and spleen in both the upright and horizontal positions. These organs may appear dislocated only in the upright position. The pancreas is often felt by the educated hand from one to two inches above the navel. Such an examination consumes a very few minutes.

The statistics which follow are the results of an analysis of eighty cases of enteroptosis taken from the records of the medical clinic. With but a very few exceptions I have examined these cases myself and thus speak from a personal experience rather than from the records of others:

	Total patients.	Total men.	Total women above 16.	Enteroptosis in men.	Enteroptosis in women.
Last three months of 1892	68	48	20	0	0
Entire year of . . . 1893	207	157	50	1	0
" " 1894	258	154	84	0	0
" " 1895	238	180	58	1	2
" " 1896	189	144	45	3	0
" " 1897	252	179	73	6	0
" " 1898	288	198	90	12	1
" " 1899	362	259	103	35	4
First four months of 1900	142	96	46	11	4
	2004	1415	569	69	11

From October, 1892, to the end of December, 1896, only seven cases are recorded. Since the latter part of 1897 I have paid more attention to the demonstration of this condition, especially during the past two years, with the result that the number of cases has increased remarkably. Thirteen cases were recorded during 1898, 39 during 1899, and 15 during the first four months of 1900. It is evident that accurate statistics can be obtained only by a careful routine examination of all cases, as there is a large number of the so-called cases of compensatory enteroptosis—patients with the anatomical conditions, but minus the symptoms. Realizing that enteroptosis was much less common in the male and more difficult to recognize, on account of the rigid abdomen, I have distended the stomachs only in those whose symptoms pointed directly to that organ. If my examinations had been more frequent it is quite probable that the number of cases observed in men would have been much larger.

In this series of 80 cases 69 were women and 11 men. In 24 cases both kidneys were dislocated, the right usually showing greater dis-

location than the left. As a rule, they were freely movable, it being possible to grasp the entire organ by the palpating hands. In 33 cases the right kidney alone was dislocated; in some only the lower half could be felt on deep breathing. In 4 cases the left kidney alone was dislocated. In 7 cases no notes concerning dislocation were found.

Only lately have I been paying special attention to Stiller's phenomenon—the costal stigma or floating tenth rib. In 8 cases the tenth ribs were distinctly floating; in 7 cases they had membranous attachments; in 65 cases there were no notes, as these patients were examined before special attention was called to this sign.

Position of the Stomach. In 69 of the 80 cases the stomach had fallen from its normal position. In 28 there was a high degree of dislocation, the entire organ lying below the navel. In 41 the prolapse was of moderate degree, the greater curvature being from two to three inches below the navel, the lesser from one to two inches above. All save 12 of these cases were distended with acid and soda. In the 12 not distended succussion sounds were present below the navel. In 3 of the 80 cases the stomach was not dislocated; in 8 there were no notes on this point. In a few cases there was both dislocation and dilatation. In several cases the colon was inflated and was found to have fallen toward the middle line and below the navel.

Analysis of the Stomach Contents. Thirty-six out of the 48 cases analyzed had a total acidity of 50 or below, 2 between 50 and 60, 4 between 60 and 70, 3 between 70 and 80, and 3 between 80 and 90. There were no notes on 32 of the 80 cases. These figures are based upon our old method of determining total acidity, which differs from the method used during the past year, in that formerly—using phenolphthalein as an indicator—the reaction was considered complete when addition of the decinormal NaOH solution produced the faintest pink. At present the reaction is not considered complete until a pink is obtained which does not deepen on the addition of NaOH. This means an additional two or three drops of the decinormal solution.

Using the method in vogue during the past year, a complete stomach analysis has been made in 16 of our cases. Of these 9 had a total acidity of about 50 or below, 7 above 50.

Blood. Examination was made in 23 cases. Of these 9 had a chlorotic condition; 13 were more or less anæmic, but not chlorotic; 1 was normal; 57 had no blood notes. In 13 of the 23 hæmoglobin was 70 or above; in 10 it was below 70.

Confinements. Thirty-five out of 56 women bore children, varying in number from one to eight; 20 never bore children; 1 had an abortion. In 13 there were no notes.

Age. In the second decade, 1; in the third, 32; in the fourth, 19;

in the fifth, 20; in the sixth, 7; in the seventh, 1. The oldest was sixty-seven, the youngest sixteen.

The symptomatology of these cases was extremely varied. In a few there were no symptoms other than a loss of weight, strength, and energy; in their words, simply "run down." In a much larger class the nervous symptoms predominated. Some of these cases were depressed, even melancholy; others very nervous, excitable, and irritable, showing various hysterical phenomena. They complained frequently of palpitation of the heart and forcible pulsation in the abdominal aorta. (In several such cases with which I am familiar a diagnosis of aneurism of the abdominal aorta was made.) Some of these patients are nervous wrecks. They can scarcely endure the sight of their own children. They are unfitted for ordinary social intercourse and domestic responsibilities.

In a third group of cases, in addition to the general symptoms of neurasthenia, there are striking symptoms on the part of the stomach or kidneys. There may be poor appetite, coated tongue, nausea, and vomiting, feeling of fulness and distress after eating, borborygmi; in some periodical attacks of gastralgia, even suggesting gallstone colic or Dietl's crises. In nearly all chronic constipation and sick headache are constant symptoms.

Illustrative Cases.

Case I.—Mrs. P., aged twenty-six years, housewife; one child. No symptoms on the part of the stomach, no nervous symptoms. She came to the hospital because of amenorrhœa. Stomach entirely below the navel; both kidneys easily felt.

Case II.—Mrs. C., aged twenty-eight years, housewife; complains of general weakness, loss of weight, dizziness, chilly sensations, aching and soreness of the flesh, and distress in the region of the stomach. Had measles, diphtheria, and typhoid fever when a child; was married at eighteen years; has had three children and one abortion. Present trouble began ten years ago with spells of nausea and chilliness, occurring two and three times a week and gradually increasing in frequency until they occurred several times daily. Appetite and digestion were good; bowels constipated; had palpitation of the heart; could feel pulse in any part of the body. Occasionally there is severe pain in the back. The stomach lies entirely below the navel; the colon is greatly dislocated and both kidneys are easily felt.

Case III.—Mrs. S., aged thirty-five years, housewife, married. From childhood had considerable gas formation, severe headaches, and vomiting. During the past three years has had numerous attacks, which were diagnosed as gallstone colic. First a tenderness is noticed in the region of the right kidney, then pain begins here, radiates to the lumbar portion of the spine, to the left kidney, and up toward the stomach, where it becomes very severe. Patient tries to vomit, has a convulsive attack, and faints away. Just before these attacks a large quantity of colorless urine is passed. The stomach and both kidneys are greatly dislocated.

Most of our enteroptotics have displacements of the uterus; a few suffer with mucous colitis, but this condition is probably secondary to the uterine trouble.

Stiller believes that there is a close association between tuberculosis and enteroptosis. I have noticed it in a number of cases. Enteroptosis might easily occur as a result of the wasting of tuberculosis. However, I believe that enteroptosis can be demonstrated in most women with tuberculous habitus before the lung disease has asserted itself.

From a study of this series of cases I think I am justified in stating that there is no etiological connection between enteroptosis and chlorosis. Meinert might with as good reason decide that chlorosis caused enteroptosis as the reverse. Most cases of enteroptosis are anæmic, but do not have the special variety of anæmia termed chlorosis. Chlorosis is often met with in persons without enteroptosis, and many enteroptotics do not have chlorosis.

Most authors mention the frequency of hyperacidity in enteroptosis. Stiller thinks there is a close connection between Reichman's disease and enteroptosis. According to my series of cases subacidity was more often present than hyperacidity. I believe that congenital cases of enteroptosis are most likely to show hyperacidity.

Etiology. The large number of women in our series who have never borne children (20 out of 56)—the large number who have never practised tight-lacing, who give no history of falls, heavy lifting, wasting diseases, or operations upon the abdomen—convinces me that there is in many a congenital predisposition to this disease. This class of cases usually shows Stiller's phenomenon—the floating tenth rib. There is a congenitally relaxed condition of the peritoneal attachments and a lack of muscular tone.

The acquired or secondary cases are more numerous, but it is difficult to determine in many to what extent a predisposition might have aided the so-called exciting cause. In many such there is a lack of tone in the tissues which makes it possible for trifling causes to produce this condition. Such etiological factors are: All conditions tending to diminish intra-abdominal pressure; frequent child-bearing, ascites requiring tapping, operation for abdominal tumors, etc. Severe infectious diseases, and chronic wasting diseases weaken the abdominal muscles and cause a disappearance of fat, resulting in a relaxation of peritoneal attachments. Straining at stool is a cause which is usually not recognized.

Treatment. The greater one's experience with enteroptosis the more conservative and guarded his statements as regards treatment and recovery. All floating kidneys and dislocated stomachs are not to be stitched into place; in fact, only a well-chosen few are benefited by

such operation. I will venture the assertion that the majority of cases operated upon for floating kidney were never examined as to whether stomachs and colon were not likewise dislocated. In most cases of general enteroptosis nephrorrhaphy will be of no benefit. I am familiar with several striking examples which illustrate the truth of this statement.

In gynecological practice a large number of women with displacements and torn perinei have distressing nervous symptoms. The specialist, taking a narrow view of the case, performs anterior fixation, uses pessaries, repairs the perineum, and is disappointed in the results of his treatment. Many of these cases are enteroptotics, and the symptoms are as much dependent on dislocated stomach, kidneys, and intestines as upon retroversion and anteflexion. Operation is advisable in cases accompanied by hydronephrosis and Dietl's crises, in which we have pure mechanical disturbances resulting from a kinking or twisting of the kidney vessels which could occur only when this organ was dislocated. Stengel and Beyea report a case of apparently congenital enteroptosis, whose symptoms were chiefly gastric, in which nephrorrhaphy performed by J. William White did not relieve the symptoms, though the kidney remained in place. Later, the operation of taking a tuck in the gastrohepatic omentum and gastrophrenic ligament was performed and the stomach brought into what seemed almost normal position. Following this operation the stomach symptoms were relieved, the patient was able to eat freely without discomfort, appetite improved, and she gained nineteen pounds. Eight months after operation the greater curvature was one and a half inches below the navel.

In cases having severe gastric symptoms requiring morphine and not relieved by other means at our command, such an operation should be considered.

Abdominal bandages or belts with properly applied pads may relieve symptoms in some cases. They should be applied with the patient in the knee-chest position or lying on her back, with the hips elevated. Reclining in bed often relieves the dragging sensation. In some cases in which the stomach symptoms are prominent, occasional lavage and the use of dilute hydrochloric acid (if there is subacidity) are useful. Exercise and massage of the abdominal muscles are of great value, but can seldom be satisfactorily carried out. I have seen many cases improve remarkably under the use of tincture of nux vomica. The method in vogue in Dr. Dock's clinic is to begin with 10 or 15 drops before each meal, increasing 1 drop daily until as high as 70 or 80 drops are taken. This medication should be combined with overfeeding. The general tone of the system is greatly improved, the nervous symptoms especially being relieved; the patient puts on flesh and in every way, with the exception of the dislocations, is greatly benefited.

If the stomach is dilated or if there is retention of food as a result of kinking in the duodenum, gastric lavage should be used as indicated. There must be a great deal of individualizing in the treatment of this condition.

THE ESTIMATION OF THE URINARY SULPHATES AND OF THE FECAL FAT IN THE DIAGNOSIS OF PANCREATIC DISEASE.

By David L. Edsall, M.D.,
INSTRUCTOR IN CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA AND ASSISTANT PHYSICIAN TO THE UNIVERSITY HOSPITAL; ASSOCIATE OF THE WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE.

(*From the William Pepper Laboratory of Clinical Medicine, Phœbe A. Hearst Foundation.*)

A reduction in the amount of ethereal sulphates in the urine has been thought to be a possible sign of pancreatic disease, for the following reasons: The production in the intestine of the substances which are finally largely excreted in the urine as so-called ethereal sulphates, is dependent upon the putrefaction of protein, and this process is due to bacterial activity. Bacteria are able to break down native albumen in only relatively small amounts, while they readily decompose comparatively large amounts of the products of proteolytic digestion. If, therefore, there were little or no proteolytic digestion going on in the intestine, as is the case in severe disease of the pancreas, the products of bacterial activity (the indol, skatol, etc.) would be largely decreased, and there would, consequently, be a reduction in the ethereal sulphates of the urine. The brief literature concerning the value of estimation of the ethereal sulphates will be reviewed after the report of two cases which are of some interest in this connection, since in both the diagnosis was ultimately made clear—by the post-mortem examination in one instance and by the subsequent clinical course in the other.

The first case occurred in a man, aged thirty-six years, who was under Dr. Stengel's care at the University Hospital. He gave a history of spasmodic attacks of colicky pain above and to the right of the umbilicus, radiating toward the left. The first attack occurred in May, 1900. The pain was subsequently felt a number of times, though the first attack was decidedly the most severe. There was an indefinite history of slight jaundice accompanying the attacks. Between the time of the first spasm of pain and his admission to the hospital in November there was a loss of about forty pounds in weight; but, excepting for the emaciation and the attacks of pain, the only symptoms had been indefinite but continuous discomfort in the epigastric region and severe constipation. Upon admission nothing could be discovered by physical examination with the exception of slight enlargement of the stomach, absence of HCl from the stomach contents, and slight stagnation of the contents.

Oppler-Boas bacilli, lactic acid, and pus cells were absent from the stomach contents. The liver seemed normal. Nothing abnormal could be felt anywhere; there was, however, slight tenderness on deep pressure in the lower epigastrium. A few days after admission the man began to show jaundice, which was slight at first, but increased rapidly and became intense in about a week. There was a very rapid increase in the signs of stagnation in the stomach, and in the enlargement of the stomach, together with the appearance of violent peristaltic movements of this viscus. The constipation was pronounced and difficult to overcome. The most striking symptom exhibited was an astonishingly rapid loss of strength and flesh. During the last two weeks of his life deep resistance, without any definite limitation of its borders, was felt in the lower epigastrium. The case was thought to be pancreatic carcinoma, and estimations of the preformed and ethereal sulphates of the urine were undertaken, and orders were also left for the feces to be sent to the laboratory. Unfortunately, these orders were not carried out. Estimation of the sulphates gave the following figures: Preformed, 2.495 grammes; ethereal, 0.085 gramme. On a second day, preformed, 2.3086 grammes; ethereal, 0.115 gramme. Further estimations could not be made, as I was obliged for several days to be out of town. The absolute values for the ethereal sulphates are very low, and the ratio between the ethereal and preformed sulphates is also in both instances decidedly below the normal, particularly in the first estimation; the normal ratio is about 1 to 10 or 1 to 12, while in this case on the first day the ratio was 1 to 29.4 and on the second day 1 to 20. The man was operated upon two days after the last estimation, and an obstruction of the duodenum and a small mass in the position of the pancreas were found. Gastro-enterostomy was done. The man did well for thirty-six hours and then collapsed and died. Only a partial post-mortem was allowed. This showed a carcinoma of the head of the pancreas completely obstructing the biliary and pancreatic ducts, the latter being absolutely closed for the distance of half an inch at its terminal portion, and behind this being dilated to a diameter of about a quarter inch. There was apparently no accessory pancreatic duct, and hence the obstruction was complete. There was no calculus. The growth had involved the intestinal wall and had caused contraction of the lumen to about the size of one's little finger. The portion of the duodenum above this was much dilated, the pylorus stretched to a diameter of an inch and a quarter, and the stomach widely dilated. There was severe gastritis, with hemorrhagic points scattered over the surface of the stomach, particularly in the pyloric region. The stomach was entirely free from carcinoma. There were a few enlarged glands in the neighborhood of the pancreas. The liver was moderately enlarged, but showed no metastases.

The second case was that of a woman, aged forty-eight years, whom I saw through the kindness of Dr. Musser and Dr. E. P. Davis. She had had some loss of general health and weight, with epigastric discomfort, and a slowly appearing and increasing jaundice, which had persisted at the time I saw her for about a month. There were no definite changes to be determined upon physical examination excepting slight enlargement of the liver, but the course of the case aroused suspicion of pancreatic carcinoma. The estimation of the urinary sul-

phates in this case showed on one day, preformed, 3.268 grammes; ethereal, 0.440 gramme; at a second estimation, preformed, 3.792 grammes; ethereal, 0.444 gramme. The ratio between the two was on the two days 1 to 7.4, 1 to 8.5. The absolute amount of the ethereal sulphates, therefore, was above the normal, and the ratio of the ethereal to the preformed sulphates was likewise above the normal on both days. A short time after I saw her she began to improve, and soon became entirely well and remains so now, one year after the period of her illness.

So far, then, as these two cases go they seem to indicate that a reduction of the ethereal sulphates of the urine may be a sign of value in the diagnosis of severe disease of the pancreas. The observations by themselves are, however, of little value, and the literature upon the subject is meagre. According to Oser, the first practical suggestion of this sign was in the observation by Gerhardi, in 1886, that in a case in which there was apparently obstruction high up in the intestinal tract the indican in the urine instead of being greatly increased, as is usually the case in such conditions, was almost absent. Gerhardi decided because of this that the obstruction was due to malignant disease of the pancreas involving the wall of the intestine. The post-mortem showed the correctness of his view.

Subsequently Pisenti ligated the duct in dogs and showed in two cases that this caused a marked reduction of the indican (which was estimated quantitatively). Stefanini and Biondi each reported a case of pancreatic disease, one suppurative pancreatitis, the other adenoma, in which indicanuria was absent. Schlagenhaufer, however, found the indican increased in a case of interstitial syphilitic pancreatitis. Katz, in the various experiments which he performed with Oser, usually found that lesions of the pancreas caused rather an increase of the indican than a decrease, and de Renzi could not find any distinctive change in the indican in experiments on animals. Oser decides that one is not justified in drawing any conclusions concerning the presence or absence of pancreatic disease from the observation of changes in the amount of indican. With this conclusion everyone must agree, as the indican of the urine is a very uncertain quantity and as a factor in diagnosis is of extremely limited value; but while a rough test of the amount of indican, or even its quantitative estimation, is by no means a satisfactory diagnostic measure, the accurate quantitative estimation of the total ethereal sulphates is of distinct value in many conditions. There have been, however, but few observations concerning the sulphates in the condition under discussion. The first was that of Le Nobel, in 1888, who found that in a case in which there was a glycosuria (probably maltosuria), with very fatty stools and without icterus, the ethereal sulphates were almost entirely absent from the urine, and the intestinal contents showed a practically complete absence of indol,

skatol, and phenol. The salts of fatty acids were also absent from the feces, and Le Nobel believed that there was severe pancreatic disease which accounted for these changes. His diagnosis was never confirmed by post-mortem examination. A. E. Taylor showed very low values for the ethereal sulphates in a case in which the presence of cachexia and icterus, with absence of signs of gastric carcinoma or of distinctive signs of disease of the liver or bile passages, made it seem probable that there was pancreatic carcinoma. Taylor also was unable to report a post-mortem examination. Northrup and Herter described a case in which there was a mass in the region of the pancreas and the general signs of carcinoma; operation showed a growth which was apparrently of the pancreas itself. Herter reports that in this case the ethereal sulphates were not reduced; they were, on the contrary, increased, and particularly in proportion to the preformed sulphates. Katz found the absolute amount of the ethereal sulphates after severe experimental lesions of the pancreas, and particularly after total or partial extirpation, variable but not greatly differing from the normal. Their ratio to the preformed sulphates was also very variable, sometimes very high and sometimes low, but never extremely low and not showing any constant tendency to be low. So far as I have been able to determine there have been no other observations concerning the test.

The summary, then, of the observations is as follows: Katz found it valueless in experimental work on dogs. Northrup and Herter found it negative in a case in which operation apparently showed a large tumor of the pancreas, while Le Nobel and Taylor found it positive in cases in which pancreatic disease may practically be accepted as present (particularly is this statement true in Le Nobel's case), and I found it positive in one case in which autopsy showed obstruction of the pancreatic duct and negative in one in which there was apparently only a protracted catarrhal jaundice. While Katz's work is important, I cannot by any means consider it so conclusive as do Katz and Oser. Observations made upon animals that have been subjected to grave operative procedures cannot alone conclusively settle questions relating to chronic diseases in man. Only a series of observations on man himself will suffice to determine the actual practical value of any test, and the very few reports of this character which I have quoted are apparently in favor of this test. Northrup and Herter's case, which gave a negative result, cannot be considered to be testimony against it, for since an autopsy was lacking it is not known whether the pancreatic duct was obstructed or not, though it probably was.

But looked at more broadly I think the test is, at best, likely to be only an inconstant aid in diagnosis and to be of real value only when positive. Normal or unduly large amounts of ethereal sulphates may certainly be conceived of as being produced even in the absence of

pancreatic secretion from the intestine, since it is known that many bacteria have the power of breaking up undigested protein and may, therefore, produce indol, skatol, and their congeners without the aid of the normal digestive ferments. It is not known to what extent this may occur in the intestinal tract or what proportion of the normal amount of urinary sulphates may be furnished in this way in either diseased or normal conditions. It must be accepted as probable, however, that the amount thus produced may be sufficient to make a negative result of the test of no value as an indication of the absence of serious pancreatic disease. In the same connection it must be remembered that some pancreatic secretion may still be furnished to the intestine when there are severe inflammatory or degenerative changes in the organ, and that small amounts of the secretion may be sufficient to make the test negative. Further, it has been strongly insisted upon by Hansemann and others that new growths of an organ may to a considerable extent carry out the secretory functions of that organ, and this may be considered to be conclusively proved. Sufficient testimony of this is seen in the repeated observation of the secretion of bile by new growths of the liver; striking evidence of this is furnished in the case recorded by M. B. Schmidt, in which channels containing bile and surrounded by cells having the appearance and arrangement of liver cells were found in a sternal metastasis of a liver growth. A similar but even more remarkable observation was that of v. Eiselsberg, who noted the onset of symptoms of myxœdema after removal of the thyroid because of a malignant growth, the subsidence of the myxœdema during the growth of a metastasis, and the recurrence of the symptoms after the removal of the metastasis. The latter proved to have a structure closely resembling that of the thyroid, with acini filled with colloid material. Unless, therefore, a growth of the pancreas completely obstructs its duct the secretory function of the organ may possibly be fully carried out by the remainder of the pancreas or by the growth itself, and any tests of that function may give normal results.

On the other hand, a positive result of the test would not always be conclusive, since values for the ethereal sulphates as low as 100 mg. in the twenty-four hours have been observed by Strauss and Phillipsohn, Rovighi, Winternitz, Biernacki, Hirschler, Krauss, and others as a result of gastric hyperchlorhydria, closely restricted diet, diarrhœa, and other causes.

If, then, these causes for reduction of the ethereal sulphates are present a positive result of the test would also be of doubtful importance; hence the actual value of the test must be limited, but this does not mean that it is wholly worthless. There is scarcely a test used in clinical medicine that does not have to be carefully scrutinized in the individual case, and in so obscure a condition as pancreatic dis-

ease usually is clinically any test that promises to give aid in diagnosis is worthy of investigation. More observations must be made before definite conclusions can be reached, but it seems probable that we shall be justified in acting as follows: If the test is negative the result deserves little consideration; if, on the other hand, the ethereal sulphates are found much reduced the other factors in the case should be considered in connection with this observation. If there is diarrhœa or gastric hyperchlorhydria, or if the patient is on milk alone or any other diet which very largely reduces bacterial activity, a low ratio of the ethereal sulphates cannot be considered of great importance, nor can much stress be laid on a low absolute value of the ethereal sulphates if the values for the preformed sulphates be coincidently low. If, however, these factors be not present, and particularly if, with suspicion of pancreatic disease, factors which usually cause an increase of the ethereal sulphates be present and yet the values be found low, the test would at present appear to be of distinct practical importance in diagnosis. Constipation, gastric hypoacidity or anacidity, icterus, grave anæmia, and cachexia are all very likely to cause an increase in the relative or absolute values of the ethereal sulphates. All these factors were present in my first case, and yet the absolute value for the ethereal sulphates was low on the second day of estimation and very low on the first day, while the preformed sulphates were relatively and absolutely high. This result was considered to be a point of distinct importance in the diagnosis of this case, and I believe it would be of importance under similar circumstances. The test does not require more time or skill than one often needs in the diagnosis of new growths by the examination of sections, though it does require rather more concentration of the time expended and a little special skill in chemical work.

AS TO THE IMPORTANCE OF FATTY STOOLS IN THE DIAGNOSIS OF PANCREATIC DISEASE.

The general clinical teaching concerning this matter is an instance of the not uncommon but unfortunate persistence of a belief far beyond the time when it has been proved that it is incorrect. Since Claude Bernard first stated that he had shown that the secretion of the pancreas splits fats, produces an emulsion of the same, and causes absorption of the fats, it has been customary in works on clinical medicine and clinical diagnosis to state, with a strange degree of absoluteness, that the presence of an excessive amount of fat in the stools is strong proof of the existence of pancreatic disease. Indeed, in a number of books one finds the curiously inaccurate statement that "the presence of fat in the stools" indicates disease of the pancreas. By this the authors must, of course, mean large amounts of fat, as it is well known that every normal stool contains some fat, and the expression is, therefore, merely

an inaccuracy in statement; but it is an unfortunate inaccuracy, for most students and many practitioners seem full of the belief that the presence of fat in the stools, whatever the amount, means disease of the pancreas. The question under consideration, however, really concerns the value of very fatty stools in the diagnosis of pancreatic disease.

Let me first quote the conclusions which Oser reaches after a consideration of the literature upon this point. His first conclusion is that steatorrhœa, as such, gives no justification for the recognition of disease of the pancreas. The second is that *if there is no icterus and no apparent disease of the intestine it is possible* that disturbed fat digestion is caused by pancreatic disease. Third, the probability that disease of the pancreas is present becomes more marked and can even approach certainty if, in the absence of icterus, steatorrhœa exists with other symptoms which point toward disease of the pancreas. Such symptoms are chiefly imperfect absorption of protein food, diabetes, or a tumor in the region of the pancreas. Fourth, imperfect absorption of the fat and coincident diabetes may be found in the entire absence of disease of the pancreas. Fifth, it is uncertain in how far disturbance of the normal splitting of fats may be looked upon as a pathognomonic symptom of disease of the pancreas. Fat splitting is undoubtedly a function of the pancreas, and Müller's cases indicate very positively that disturbance of fat splitting is a strong sign of pancreatic disease; but this question has not been sufficiently studied, and a positive conclusion cannot yet be reached.

In spite of the fact that Hartsen in animal experiments seemed to show that extirpation of the pancreas caused marked disturbance of the fat absorption and thereby seemed to confirm Claude Bernard's results, there is a great deal of testimony that this does not necessarily occur even under such extreme conditions, though the most important observations—those of Minkowski and Abelmann and of others who followed their methods—do seem to demonstrate positively that in animal experiments extirpation of the pancreas is followed by marked disturbance in the absorption of all fats except milk fats. It is not yet absolutely proved, however, that even extirpation of the pancreas has as a necessary result severe disturbance of fat absorption. The chief basis of the rather absolute teaching of clinicians seems to be the fairly frequent observation of the presence of fatty stools in cases which are, clinically, believed to be disease of the pancreas. The diagnosis of disease of the pancreas is, however, so insecure that it is surprising that clinicians have been so wedded to mere isolated observations without engaging in more careful study of the literature concerning experimental work and that concerning the conditions found in human subjects who showed other affections than disease of the pancreas. It is now fourteen years since a very important contribution by F. Müller showed very conclu-

sively that icterus of itself, unassociated with pancreatic disease but, of course, associated with absence of bile from the intestine, was accompanied by the passage of extremely fatty stools. In spite of the long period since this work was published, it is rather astonishing to see perpetuated in many of the most important works on general medicine and clinical diagnosis as well as in many special treatises on diseases of the pancreas the unvarnished statement that fatty stools are indicative of pancreatic disease. The most important fact which shows this teaching to be erroneous is that Müller's work and that of other observers, Walters especially, has demonstrated definitely that fatty stools can be seen in most cases of icterus in which the pancreas is entirely uninvolved. This had also been thoroughly demonstrated years before in experimental work on animals. But it must also be remembered that Müller showed, and his work has been confirmed by other observers, that severe disease of the intestine causes such pronounced disturbance of fat absorption as to give rise to the passage of stools that are very largely composed of fat.

The one observation which I have to report in this connection relates to the importance of icterus in the production of fatty stools. The second case to which I referred in discussing the sulphates was put upon a diet consisting solely of milk. The fat of the milk was estimated daily by the Leffmann-Beam method, the stools were marked off by charcoal, and three days' stools were collected, a strong solution of corrosive sublimate being added to prevent continued bacterial activity. The stools were evaporated to dryness. As they came to me the stools were completely acholic in appearance; they had a pale, grayish-yellow color, appeared to be composed chiefly of fat, and were extremely pasty and oily in consistency. After evaporation to dryness it was evident that they were composed almost entirely of fat, for even when the water was completely driven off moderate heating on a water-bath caused the whole mass to become completely fluid and to assume the appearance of oil. Upon cooling the stools became solid, but even when cold the consistency was much like that of a mass of pure fat. The total amount of dried feces in the three days was 184.69 grammes. Of this 154.18 grammes were shown by complete ether extraction in the Soxhlet apparatus to consist of fat. Hence of the total amount of dried feces 83.48 per cent. was fat. The patient during the three days ingested 250.8 grammes of fat, and the total amount of fat in the feces was 154.18 grammes. She absorbed, therefore, only 61.6 per cent. of the fat ingested, while normally as much as 90 per cent. is usually absorbed. This patient, as will be remembered, became entirely well soon after this observation was made, and it may therefore be stated, I think, that there was no pancreatic disease. There was, however, pronounced icterus, and it is almost unquestionable that the icterus alone caused the

marked disturbance of fat absorption. This is only a single contribution to the work to which I particularly referred—that of Müller, in which he showed clearly that icterus causes profound disturbance of absorption of fats—but it serves to add emphasis to the statement quoted that poor fat absorption is of itself of no importance in the diagnosis of pancreatic disease if icterus is present; and in carcinoma—the most common disease of the pancreas—icterus is so frequently present as to make such a statement one of great importance.

The last of Oser's conclusions, to which I referred earlier, relates to the observation made by Müller that while the fat absorption is greatly disturbed by absence of bile from the intestine, the splitting of the fats is normal in this condition, but is much reduced in pancreatic disease. As stated by Oser, there have been few studies of this question excepting those made by Müller himself. v. Noorden obtained results similar to Müller's in two cases of pancreatic disease. Northrup and Herter, in the case which has previously been referred to, investigated the splitting of the fats with negative results, the fat digestion being normal; but, as they state, negative observations do not invalidate Müller's teaching. It is quite possible that the intestinal bacteria may exercise sufficient fat-splitting action to make a negative result in such an investigation of no value. It is also quite possible, I think, as I said before in speaking of the sulphates, that the pancreatic duct at the time of examination may have been open or only incompletely closed; pancreatic secretion may have been produced to some extent, and the secretion may have partly or wholly escaped into the intestine, thus making the result negative.

It seems probable that a negative result of this test also would not be of much value, for such a result would be subject to about the same considerations that I have suggested in speaking of the ethereal sulphates. A positive result, however, so far as our knowledge now goes, would seem to be an indication of pancreatic disease if diarrhœa were absent, for I am not aware that marked disturbance of the fat-splitting action has been observed in any case in which it was known that pancreatic disease was absent, excepting when severe intestinal disturbance was evidently present.

In the case of prolonged catarrhal jaundice in which I studied the fat absorption I also investigated the amount of fat splitting that had taken place; 78 per cent. of the large amount of fats that was present in the feces was fatty acids and soaps, only 22 per cent. being found as neutral fat. These conditions are entirely normal, and hence the case also serves to add some weight to Müller's statement that icterus, while largely interfering with fat absorption, does not disturb the splitting of the fats. In the case of pancreatic carcinoma a study of the digestion of the fats would have been more directly of diagnostic

interest. Unfortunately, such a study could not be carried out, because the stools were not preserved owing to confusion resulting from a change of ward nurses.

Literature.

Oser. Die Erkrankungen des Pankreas. Nothnagel's spec. Pathol. u. Therap., Bd. xviii., Abtheil. II., p. 99.
Gerhardi. Virchow's Archiv, 1886, S. 303.
Pisenti. Arch. per le sc. Med., 1888, p. 87.
Stefanini. Gaz. degli osped., 1896, p. 848.
Biondi. Riforma med., 1896, vol. ii., No. 9, p. 97.
Schlagenhaufer. Arch. f. Dermatol. u. Syph., 1895, Bd. xxxi. S. 43.
Le Nobel. Deutsch. Archiv f. klin. Med., Bd. xliii. S. 285.
A. E. Taylor. Transactions Philadelphia Pathological Society, vol. ii., new series.
Northrup and Herter. American Journal of the Medical Sciences, February, 1899.
M. B. Schmidt. Virchow's Archiv, Bd. clviii.
Strauss and Phillippsohn. Zeitsch. f. kl. Med , Bd. xl., Hefte 5 and 6.
Hoppe-Seyler. Zeitsch. f. physiol. Chemie, Bd. xii.
Rovighi. Zeitsch. f. physiol. Chemie, Bd. xvii.
Winternitz. Zeitsch. f. physiol. Chemie, Bd. xvi.
Biernacki. Zeitsch. f. physiol. Chemie, Bd. xvii and xix.
Hirschler. Zeitsch. f. physiol. Chemie, Bd. x.
Krauss. Zeitsch. f. physiol. Chemie, Bd. xviii.
Müller. Zeitsch. f. klin. Med., 1887, Bd. xii. p. 45.
Walter. Abstract in Maly's Jahresbericht, 1888, Bd. xvii. p. 27.
v. Noorden. Berl. klin. Woch., 1900, S. 1022.
Minkowski and Abelmann. Berl. klin. Woch., 1890, No. 15. Dissertation by Abelmann, 1890 and Maly's Jahresbericht, 1890, Bd. xx. p. 44.

PREMATURE INFANTS.

By Vanderpoel Adriance, M.D.,
of New York.

I have selected the subject of premature infants because it has been inadvertently neglected. The theme is far from hackneyed; and as I have had unusual facilities for observing this class of patients at the Nursery and Child's Hospital of this city, it is hoped the subject may be of interest. Records of forty cases are in my possession, of which a large majority have come under my observation clinically or on the autopsy table.

On examining a premature infant we are impressed with its general diminutive characteristics, with which the excessively developed head ill corresponds. The skin is a raw, cinnamon-red, and presents lanugo in proportion to the period of prematurity, while the lack of subcutaneous fat gives the skin a wrinkled appearance and the face an expression of senility. The greater the period of prematurity the more marked the torpor and inactivity of the child. The limbs evince little motion, and the occasional feeble whine contrasts strongly with the cry

of the healthful full-term infant. During the first days the eyes are constantly closed, and the child passes its time in torpid somnolence, never displaying even the wandering stare that a full-term infant shows through its half-open lids.

The nails are soft and do not reach the ends of the digits; this is even more noticeable on the toes. The wide-open fontanelles and sutures give a yielding character to the cranial vault, and the bones are so soft and pliable that the symmetry of the skull is easily destroyed by pressure. If temporary, the bones quickly resume their proper relations; but if by lying in one position, as is often the case, the weight of the head falls continuously upon one side, a marked deformity develops.

Even a full-term infant experiences a contrast during its first days of independent existence, and begins a struggle which ill suits the lazy habits acquired in utero; unceremoniously forced from its parasitic life, it is now compelled to do its own work and earn its own livelihood. During the first days of the struggle for existence many succumb to the novel conditions.

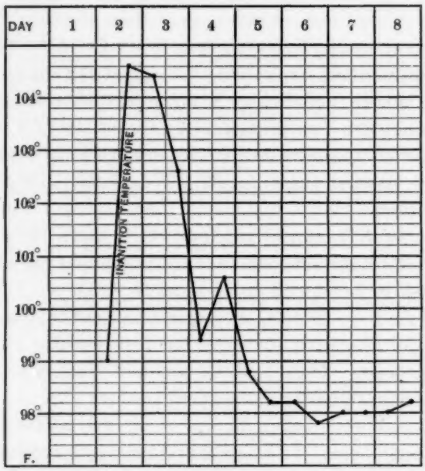
If hard upon the full-term infant, how much more difficult the effort for the prematurely born, all too soon thrust into an unsuitable environment where each undeveloped organ must be subjected to an unaccustomed strain. As if in protest, the vigorous infant sets up a howl, but the weak lungs of the premature can but feebly whine a denunciation of the entire process. Thus begins a series of respiratory gymnastics which must be independently maintained through life.

The greatest task undertaken by the premature infant is the maintenance of its body heat. In utero this is passively received from and governed by the mother, but at birth the infant passes from the uniform temperature of the amniotic fluid to the lower and variable temperature of the air. From this time the uneducated heat centre struggles to so control the manufacture and loss of heat that a normal temperature may be maintained.

The last chart (V) shows the temperature of an infant born at the twenty-ninth week. Its birth-weight was only three pounds. For nine days the temperature remained subnormal. This may have been due to a lack of vitality which did not permit of proper heat production, or, what is more likely, to an excessive heat loss. It is a well-known physiological fact that the smaller the individual the greater is the proportion of body surface exposed for radiation, and consequently premature infants are compelled from their diminutive size to manufacture a greater proportional amount of heat. Unjust as it seems, then, the smaller and more premature the infant the greater is the task imposed. It is hardly to be expected that the uneducated heat centre can be forced to that nicety of control which exists after the mature training of adult life.

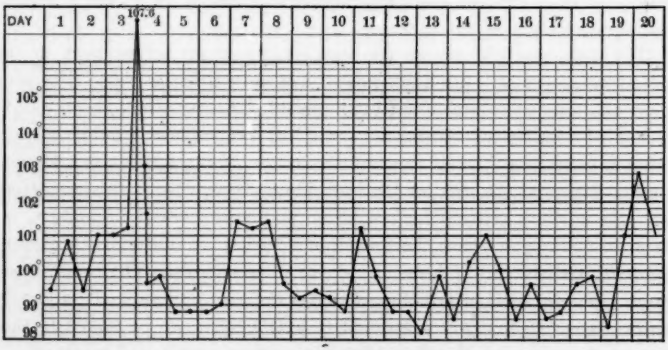
In the premature infant it is especially erratic during the first days of life. The infant may maintain a high range of temperature, in which case the fuel of the body is unnecessarily consumed and the constitution weakened; or the temperature may remain subnormal, this being an index that the vitality of the child is low and death may be impending. More frequently the temperature runs an up-and-down course, at times high and at times low, and days may elapse before the normal is

CHART I.



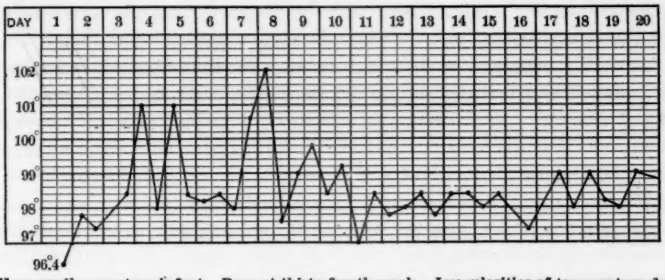
Inanition temperature. Infant born at thirty-fifth week.

CHART II.



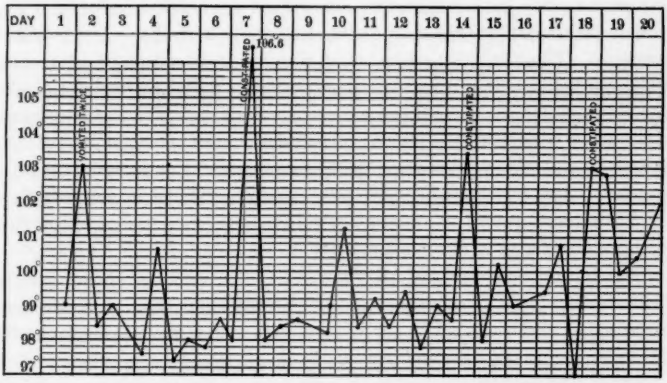
Born at thirty-fifth week. Irregularity of temperature unaccounted for except by prematurity of infant.

CHART III.



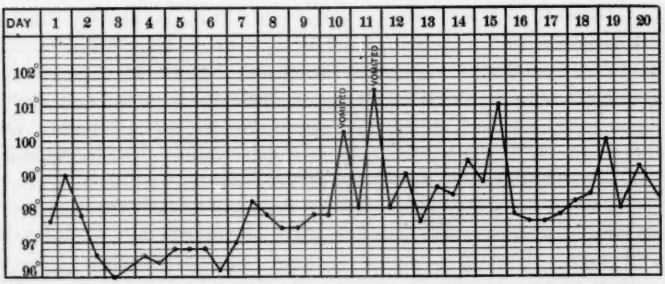
Very small premature infant. Born at thirty-fourth week. Irregularities of temperature due to prematurity and constipation.

CHART IV.



Born at thirtieth week. Temperature irregular. The smaller variations due to period of prematurity and the larger to gastro-intestinal symptoms.

CHART V.



Born at twenty-ninth week. Birth weight 1480 grammes (3 pounds). Temperature subnormal till the tenth day. Had repeated attacks of cyanosis.

approximated. An irregular temperature may be considered quite the normal, and no further cause need be assigned than the prematurity of the infant.

Secondly, changes in temperature may be due to gastro-intestinal symptoms, to which these infants are particularly prone. Constipation, looseness of the bowels, and attacks of vomiting frequently cause a sharp rise in temperature. An overheated incubator may cause a miniature heat prostration, which, fortunately, needs no more active treatment than a more careful regulation of the heat supply.

In order to understand the irregularities of respiration it is necessary to study the embryology and pathology of the lung. During fœtal life no alveoli exist prior to the fourth month, and the bronchial tubes are widely separated by mesenchyma. As the lungs develop the ramifications of the tubes extend rapidly. In the prematurely born the alveoli are surrounded by an excessive amount of connective tissue and are poorly developed, so that they contrast strongly with the superabundant bronchi. The vascular structure of the lungs is composed of a rich, unsupported capillary network whose elastic walls are easily overdistended and led to encroach upon the air vesicles. The feeble respiration permits of collapse of the air vesicles and engorgement of the vessels, resulting in hypostasis and atelectasis of the posterior and dependent lobes. Autopsies upon this class of patients in the first days of life seldom reveal completely aërated lung, patches of atelectasis being seen in a greater or less degree.

The bony framework of the thorax is non-resistant and elastic, so that during forced inspiration the chest-wall sinks in. With such an ill adapted chest-wall and poorly developed lungs the gasps of the infant are disappointingly ineffective.

After it is first established the respiratory centre is unstable and the action of the lungs irregular. A respiratory rhythm resembling the Cheyne-Stokes is frequently seen. The primary respirations are apt to be delayed or so feeble as to require treatment. Even after being first stimulated to its task the respiratory centre may fail and an attack of cyanosis ensue. In adult life such a plight would automatically stimulate the respiratory centre to action, but under these conditions prompt treatment must relieve the dyspnœa, or the helpless infant may gasp in vain. One attack of cyanosis is apt to be followed by another, each becoming more urgent, until at last death ensues. This is one of the most frequent terminations of the prematurely born.

Of the 40 cases of which I have records 11 had cyanotic attacks, causing 4 deaths; while 2 others died of cyanosis and complicating symptoms. That the liability to these attacks is increased by the period of prematurity is seen by the fact that six of these cases

occurred in children born in the twenty-eighth, twenty-ninth, and thirtieth weeks, while only five are recorded thereafter. They are also peculiar to the first days of life, and in the series under consideration no deaths were caused by them after the tenth day of life.

The ductus arteriosus and foramen ovale appeared to have no part in these attacks of cyanosis, for both post-mortem and clinical evidence demonstrated a closure of these structures.

The independent maintenance of a regular temperature and respiratory action is not attempted until after birth, but the heart in utero has had preliminary education, and its action is consequently more regular than that of respiration. Still, it is not as machine-like as when experienced in its task, and occasionally falters. In fact, death may ensue from simple cardiac failure. In the records in my possession four died from no assignable cause. The machinery refused to work, and in this breakdown the heart probably played a part.

The kidneys, like the other vital organs, may balk in their duty; often a day goes by without any urine being passed, and occasionally it is longer delayed. Uric acid is secreted in abundance, as evidenced by the frequent pink stain upon the napkins, and inspection of the kidneys reveals fan-shaped infarctions of uric acid in the pyramids.

Another frequent symptom of prematurity is a general œdema. It is difficult to say to what this is due. It may be the feeble heart, the balking kidneys, or the anæmia of the infant.

Premature infants possess at birth an excessive amount of hæmoglobin, but it appears to be loosely bound in the red corpuscle, and there is a decided tendency to the development of an anæmic state. Ofttimes we are impressed with the waxy whiteness of the occupant of the incubator; this is simply an exaggeration of the loss of hæmoglobin which occurs during the first three weeks of a full-term infant's life. Destruction of hæmoglobin is active in both cases, but, as in other constructive processes, the organism of the premature is tardy in fulfilling its duty.

The weight of the child is the best guide we have as to its condition, and its birth-weight is an index to its vitality. The premature weigh less and gain more slowly than the full-term infants, but the slight variations in weight are all-important, and it is not until there is a steady gain that proper progress is assured, and, on the other hand, a steady loss is threatening. A normal full-term infant loses weight for three days, and then makes steady gains until the birth-weight is regained by the tenth day. In the premature the constructive processes are slower, and the average of the cases under consideration do not show the birth-weight regained until the thirty-first day. The more premature the infant the slower the process of tissue formation, and months may elapse before the Liliputian characteristics are lost.

MORTALITY ACCORDING TO PERIOD OF PREMATURITY.

Period of Prematurity.	Diseases of Prematurity (died).	Diseases of later life (died).	Discharged.	In hospital.
28 weeks	5			
29 "	...	1		
30 "	4	2		
31 "	...	1		
32 "	1	...	1	
33 "	1	...	1	
34 "	...	1	1	
35 "	...	2	5	
36 "	2	...	2	
37 "	...	4	1	3
38 "	...	...	2	
	13	11	13	3

Of the 40 cases reported 16 were discharged or are still inmates of the Nursery and Child's Hospital, while 24 died. All the children born in the twenty-eighth week succumbed in a few hours or days. One born in the twenty-ninth week was making good gains and doing nicely, when he contracted measles at nine months of age and died of a complicating pneumonia. It is unfortunate that so many cases like this terminated in death due simply to extraneous causes, and not attributable to prematurity. This fact has made an unwarranted increase in the death-rate. Of the 24 deaths 11 are attributable to the infantile diseases of later life, none of these dying until the period of full term was passed. Measles and pneumonia killed 2, pneumonia 1, while marasmus caused 7 deaths. None of these children died until after they had passed the nine months of uterine life, consequently cannot be said to have died of prematurity *per se*. Their deaths can be ascribed to the usual conditions which threaten the life of any infant in an institution; still the large death-rate from malnutrition naturally suggests a predisposition to an unbalanced nutrition. The patients did remarkably well as long as mother's milk could be obtained, but the death-rate was increased by the scarcity of the supply. This compelled the administration of a substitute feeding as soon as the critical days were past. Artificial feeding, together with the unhygienic conditions of institution life, were large factors in the death-rate.

CAUSES OF DEATH.

No evident cause	4
Hemorrhages	2
Cyanosis	4
Cyanosis and hemorrhages	1
Anæmia	1
Anæmia and catarrhal colitis	1
Anasarca and cyanosis	1
Malnutrition	7
Gastro-enteritis	1
Measles and pneumonia	2
	24

Thirteen died of the diseases peculiar to prematurity; of these, cyanosis killed four. Three deaths are recorded from cyanotic attacks during the first four days and only one as late as the tenth. Autopsies in these cases showed the condition was due to atelectasis of the lungs. Four cases died of no assignable cause. Although these cannot be safely classified as due to heart-failure, no doubt disturbance of that organ was a determining factor. Two deaths were caused by hemorrhage pure and simple. Autopsy in one of these cases showed large clots in the lateral ventricles, while in the other the hemorrhage was located in the suprarenal capsules and broke, forming a large retroperitoneal clot. One infant died of a combination of cyanosis and hemorrhages; blood was passed from the mouth, nose, vagina, and rectum.

In one case a marked anæmia appeared to be the only cause of death. A general œdema, combined with cyanosis, killed one. It is a common observation that premature infants show little resistance to infection, and without proper precautions may die of sepsis. Fortunately, in the present series no deaths are recognized from that cause.

PROGNOSIS. The more premature the infant the more hazardous the outlook. Few infants born before the twenty-ninth week are saved. The temperature has no prognostic value.

Attacks of cyanosis are not necessarily fatal, and if the infant withstands them during the first few days the case becomes more hopeful, the attacks gradually diminishing in significance as time goes on.

Continued loss of weight is discouraging, and the sooner a steady gain in weight is recorded the better. Some time must elapse before the nutritive processes have developed a healthy body; but once well started the extra-uterine growth of the child should be healthy, although perchance tardy. A tendency toward malnutrition, however, should be guarded against.

TREATMENT. Some premature infants demand no more treatment than those born at full term, and of this class it is hardly necessary to speak. Let us rather confine our attention to those whose demands are the most exacting.

The proper treatment of the premature infant requires excessive attention to details. We are apt to consider an incubator the one and only requisite; but while it is quite necessary, it is vain to place reliance upon it to the neglect of the exacting duties of everyday life. The premature infant demands as nearly as possible the conditions experienced in utero, and every effort must be made to simulate this environment. The child in utero rests in a warm chamber, bathed, as we may say, on every side by a water bed, while the body-wall of the mother shields it from external violence. No ray of light or sound from the external world disturbs its delightful slumber. These condi-

tions we must strive to simulate artificially, and the incubator must be dark and quiet, while the temperature is carefully regulated. It is not essential to discuss the mechanics of the incubator, which are described in various text-books. It is only necessary to say that the temperature should be controlled to meet the various conditions. If the infant is very puny and in an early stage of prematurity the temperature of the incubator must be high at the onset; 95° F. is well tolerated in these cases. It is exceptional for as high temperature as this to be required for any length of time. In the ordinary case 90° F. is high enough. A temperature-chart recording a continued low range indicates that the heat-producing power of the infant must be artificially aided, while a state of fever may better be controlled if the temperature of the incubator is reduced.

Only careful watching can satisfactorily accomplish our object. Often the patient's temperature is abnormally increased by the excessive heat of the incubator, but promptly falls when this is properly regulated by the nurse.

A high temperature should be gradually reduced as the vitality and animal heat of the patient indicate, but the incubator will at least be required until the child has reached an age corresponding to full term, and in many cases longer.

During incubator life the reduction in temperature must be gradual until it corresponds to that of the open room, and the child is by degrees educated to existence outside the incubator.

It is useless to lay down arbitrary rules for the temperature of the incubator. It is only by close observation and good sense that it can be properly regulated.

If possible it would be better to forbid any disturbance of the infant whatever, but attention to the toilet demands a certain amount of handling. Fondling and unnecessary handling strain the heart and cause unaccustomed sensations, which are more deleterious than ordinarily appreciated. They should be strictly forbidden. Baths are to be prohibited for several days, and if the buttocks are soiled the necessary cleansing can be accomplished with a bit of moist absorbent cotton. Even the napkin is easily dispensed with and its place taken by a bit of soft cotton, which absorbs the urine and receives the feces. This can be replaced without disturbing the infant.

The simpler the clothing and the fewer the pins and fastenings the better. Our ideal is well realized in a shirt which opens down the entire front and is long enough to completely cover the feet. This should be made of an inexpensive material, so that it can be destroyed when soiled, and should be so soft that it will not irritate the sensitive skin. No material suits the purpose better than cotton sewed between two layers of fine cheese-cloth. Wrapped in this, the infant should repose on the

softest possible couch, and only be disturbed for feedings or changes in the toilet.

Without daily weighing it is difficult to judge of the infant's progress, but in most cases it had better be dispensed with and the observer content himself with a record of the weight at infrequent intervals.

The attacks of cyanosis are serious, and each attack should be promptly treated by the administration of oxygen and minim doses of whiskey. This symptom frequently appears after taking food, and if any of the milk has found its way into the larynx and trachea it should be promptly removed by inversion of the infant and by patting the back. Distention of the stomach, by pressure on the lung tissue, may cause cyanosis; distention of the bowels may also embarrass respiration. In fact, the intestines demand the closest attention, as their action is sluggish. The entire muscular system, whether voluntary or involuntary, is poorly developed, allowing of nothing but feeble movements and apparent torpor. The muscle of the intestines permits of a stagnation of the feces, which must be urged onward by small doses of castor oil. Attention to this apparently insignificant function may keep the vitality of the infant from danger. The abdominal wall is non-resistant, so that herniæ easily force their way through in a goodly number of cases, giving conspicuous evidence of a lack of muscular tone.

The stomach of the premature is very small, and whereas a full-term infant's stomach has a capacity of an ounce, the premature must be fed in fractions of that amount. The smallest of this class of patients take but a drachm at a feeding, while the more robust can take two or three drachms or more at the beginning.

Although but small amounts are tolerated, the fuel should be frequently administered to maintain the body heat. The intervals of feeding should be hourly at first, and gradually increased by a quarter of an hour at a time until the quantity and frequency of the feeding approach that indicated in a full-term child.

The torpor and weakness of the premature during the first days of life often prevent the instinct of nursing. In such a case the infant must be fed. The milk is best offered in a medicine dropper, a few drops at a time; it readily runs back into the fauces and is swallowed. As the constitution becomes stronger the infant can be taught to nurse from the bottle, and later it can be taken from the incubator or put to the breast.

Gavage, highly recommended by some authorities, appears to disturb the infant too much, and it has not been found necessary in the cases reported. Certainly it should be avoided if simpler means are adequate.

The importance of proper feeding in cases of prematurity cannot be too strongly accentuated, more deaths resulting from ignorance of this subject than any other one item. In the first place, the gastro-intestinal

tract is so poorly developed that fats and proteids are feebly digested. If a modified milk is administered it must be weak, not containing more than 1 per cent. of fat and 50 per cent. of proteids, until the alimentary tract is educated to its task. Modified milk is warmly recommended by Rotch, of Boston, but our experience indicates that it should not be used when proper breast milk is obtainable.

Mother's milk is the ideal food, and every premature infant should have it if its variations and management are properly understood. In order to explain the subject attention is called to the analyses made by my brother, John S. Adriance, Ph.D. In co-operation with him the author published in the *Archives af Pediatrics* of February and March, 1897, an extended article on the chemistry of human milk. It was demonstrated that there are peculiarities during certain periods of lactation. During the first few days, when the breasts are assuming their activity, there are irregularities which do not occur when the function is established. Normal colostrum—that is, milk during the first few days after a full-term labor—shows a wide variation in the amount of fat. The sugar is low at first, but increases rapidly, and by the end of the first two weeks has made a marked increase. The proteids pursue just the opposite course, being higher on the second day than at any other time during lactation, but falling rapidly during the first few days, and less rapidly thereafter.

This excess of proteids in colostrum milk is due to the sudden assumption of the mammary function. The breasts are unexpectedly engorged with an increased blood-supply and the mammary cells forced to activity. It is no marvel that during this strain the secreting cells permit of a serous transudation and that an excess of albumin is found in the secretion.

The milk offered by the breasts during the first days after a premature labor is colostrum milk and has its characteristics, but to an exaggerated degree. The marked increase in the amount of proteids is especially noticeable. The excess persists longer, and it is not easily dispelled. It has even been found persisting as high as 2 per cent. in the second month.

ANALYSIS OF PREMATURE MILK AT SUCCESSIVE TIMES.

	4 *days.*	17 *days.*	1 *mo.* 10 *days.*
Fat	3.39	3.32	3.33
Carbohydrates	5.02	4.43	6.64
Proteids	4.90	3.88	1.71
Salts	0.31	0.26	0.10
Total solids	13.66	11.91	11.79
Water	86.32	88.08	88.20

These analyses demonstrate an excessively high percentage of proteids, accompanied by a correspondingly high percentage of salts. They

decrease together as lactation progresses. The amount of carbohydrates is lower than in any other series of milk analyzed. The last two factors hardly require attention, but the excessive proteids should be recognized.

The management of this condition is difficult; while ordinary colostrum milk soon adjusts itself, the milk of prematurity persistently maintains a high percentage of proteids. It may be reduced by administering large quantities of water to the mother or by pumping the milk and diluting with milk-sugar solution. Exercise, upon which we ordinarily rely for diminishing the proteids, is out of the question during the period of childbed.

Even if our efforts were successful the milk presents different characteristics from that later in lactation, and cannot be administered in safety. Many premature infants could be saved if this were generally known and the gastro-intestinal functions guarded with the care they demand. Attacks of vomiting and looseness of the bowels, with curdy movements, may seem trifling, but they are unwarranted in these delicate patients, especially when it is realized that a toxic gastro-enteritis with high temperature and fatal issue may ensue.

In cases of prematurity, then, the mother's milk should not be offered, but a wet-nurse secured. Her infant must be healthy, full term, two weeks of age (and, better, a month), in order that the characters of the colostrum period may be lost, and nothing will better determine the quality of her milk than its chemical examination.

The mother's breasts in the meantime should be pumped and massaged, so that they will not dry up, but after the proper change in function will offer the proper food. The change from wet-nurse to mother, however, must be gradually and carefully managed.

To summarize feeding in this condition, our indication is to administer a weak, digestible food, guarding against overtaxing the stomach and intestines. These organs must be protected, even if temporarily the nutrition of the infant appears to suffer, their future education being relied upon to take care of a stronger diet.

A CONTRIBUTION TO THE STUDY OF FATTY INFILTRATION OF THE HEART SECONDARY TO "SUBPERICARDIAL OVER-FATNESS."

By J. M. Anders, M.D., LL.D.,
PROFESSOR OF MEDICINE AND CLINICAL MEDICINE, MEDICO-CHIRURGICAL COLLEGE.

In this paper it is intended to consider, principally, questions relating to fatty infiltration of the heart as met with in extreme obesity. I desire also to note briefly the more distinctive symptoms of pure fatty overgrowth (fat around the heart). This will, it is hoped, assist in the dis-

crimination of the cases in which fatty infiltration is superadded. A certain small proportion of the cases of fatty infiltration are associated with graver forms of myocardial degeneration, principally fibroid and fatty. As the result of considerable personal experience with cases of fatty overgrowth and fatty infiltration the belief that fatty degeneration is a rare sequel of the latter condition is amply confirmed. The view that "fatty deposits in and around the heart often cannot be distinguished from fatty degeneration,"[1] however, is incontrovertible. Conversely, I have met instances that presented undoubted evidences of "subpericardial over-fatness" combined with features that aroused suspicion of fatty infiltration and degeneration, in which, after the over-fatness was removed, the heart-sounds became of normal strength and clearness, the features pointing to myocardial involvement disappearing.

According to E. Leyden,[2] the cases of "fat-heart" are divisible into two subclasses: (*a*) fatty overgrowth and (*b*) fatty infiltration. By the former term is meant an excessive deposit upon and around the heart in the subpericardial space; the latter (fatty infiltration) refers to an infiltration or a dipping of fat between the muscle-fibres even to the endocardium. While accepting this general classification, which is both convenient and expressive from a clinical stand-point, I would suggest for the first subclass the term "subpericardial over-fatness," since all cases present clear evidences of general over-fatness, rarely of partial over-fatness, and there is slight, if any, implication of the myocardium in most instances. On the other hand, the form of fatty infiltration under consideration is clearly a rare condition, if we accept the not uncommon instances hinted at above in which the morbid process is limited to a thin layer of muscle-fibres situated directly beneath the epicardium, and one met in extreme obesity, as a rule. When the infiltration is confined to the superficial muscular bundles it is more than doubtful if the characteristic symptoms of fatty infiltration arise. Clinically, it is important to make a clear subdivision of "fat-heart" into two classes: the one, a large class, easy of recognition, in which there is an abnormally large deposit of fat beneath the epicardium; the other, a small group, not easily recognized, in which interfibrillar fat deposits occur, and of graver significance. It is with the view to the adoption of a term that is more nearly distinctive of the condition, both as to the position as well as the significance of the fat-deposit, that I venture to suggest "subpericardial over-fatness" to indicate the more common and less serious form of "fat-heart."

Fatty overgrowth was described by a few of the earlier writers,

[1] Schott. British Medical Journal, August 18, 1894.
[2] Berlin. klin. Wochenschrift, April 22, 1878.

among them Kirkringius and Bonet.[1] Nothing of importance, however, was added to our accurate knowledge of the subject prior to the middle of the present century. Moreover, it has attracted a remarkably small share of attention since that epoch-making period in myocardial affections.[2] Mere obesity (subpericardial fatness) does not imply fatty infiltration; but it may in a mechanical manner produce respiratory and circulatory disturbances, particularly venous stasis, as shown by cyanosis, a frequent, small pulse and dyspnœa, or a distinctly asthmatic form of breathing and sometimes cough. These symptoms are commonly provoked by undue muscular exercise, which readily induces heart-strain and embarrassment of the respirations in the obese. From the continuation of the operation of such influences, as in certain occupations, venous stasis may lead to so-called passive catarrh of the mucous membranes. Certain bronchial and gastric phenomenon with which we are acquainted now ensue. In subpericardial over-fatness the heart's weight and labor are obviously increased. The poisonous products of tissue-metabolism are not eliminated in the normal ratio. Indeed, in one of my cases, a female, aged forty-two years, presenting marked obesity, weight 225 pounds, the daily renal output was diminished one-half from the normal health standard. The amount of food ingested even under these circumstances was plus, and the case exhibited all of the typical phenomena of lithæmia, of which the obesity was probably the cause. Doubtless the degeneration (fatty) of the myocardium that is sometimes witnessed in long-standing cases is secondary to the changes that often occur in the vascular system (arterio-sclerosis). It is conceivable also that, owing to the mechanical obstruction to the cardiac movements in consequence of the presence of a copious deposit of fat in the mediastinum and beneath the epicardium, the heart action may be totally and suddenly arrested as the result of violent exertion.

Morgagni[3] narrates a case of a corpulent man, aged fifty-eight years, who had been suffering three years prior to death from attacks of angina pectoris. The autopsy revealed a large deposit of fat in the mediastinum and subpericardial areas. The heart was of normal size and apparently quite sound. He expressed the opinion that the cause of death was the enormous fat deposit which obstructed the current of blood in the heart and lungs. No mention, however, is made of the condition of the coronary vessels.

In two cases of subpericardial over-fatness, one reported by R. G. Hebb and the other by Hingston Fox, sudden death occurred. One

[1] Quoted by Alfred Stengel, Philadelphia Medical Journal, October 13, 1900.

[2] For the historical development of the subject the reader is referred to the excellent article of F. Forchheimer, M.D., AMERICAN JOURNAL OF THE MEDICAL SCIENCES, December, 1888.

[3] Cor adipeplane tectum.

of these patients fell dead while running to catch a "bus;" the other, five minutes after being anæsthetized. In both instances, however, rupture of the left ventricle was noted at autopsy. Hingston Fox's case, "from staining reactions of the muscle-fibres and their striations," showed no indication of either fatty degeneration or fatty infiltration of the heart-wall. In Hebb's case "fatty degeneration was absent." Such facts as these go to show that subpericardial over-fatness, looked upon usually as being free from immediate danger to life, may possess considerable medico-legal importance. Among the inevitable secondary effects occasioned by this interference of general fatty overgrowth with the heart mechanism and lung expansion are certain nutritive disturbances, the extent of which it is impossible to estimate with any degree of accuracy. Ordinarily, while at rest, the pulse is regular and moderately strong, although hard to reach in some cases. In the plethoric form of obesity, notwithstanding the presence of greatly thickened chest-walls, the great strength of the cardiac systole is often surprising, while the pulse is full and regular. On the other hand, particularly in the anæmic variety of obesity, it may be small, less tense (compressible), and slightly increased in frequency, but, as a rule, regular. A moderate grade of cardiac hypertrophy due to an increased demand upon the contractile energy of the heart is sometimes observed, but in many instances it is not found present. Says Kennedy,[1] *cardiac hypertrophy* (italics mine) "is not to be wondered at, for it would be strange indeed if, with an addition of from three to six ounces of fat placed on the organ, it would continue to carry on the same degree of action as in the normal state." It is often impossible to determine the size of the organ during life, owing to the overlying fat deposit. Enlargement is more common, for obvious reasons, in cases in which dilatation ensues in consequence of fatty infiltration. Not a few of the subjects of subpericardial over-fatness lead active, useful, and energetic lives.

It is impossible in the present state of knowledge to establish precisely the relation of this condition to fatty infiltration and myocardial degeneration, either fibroid or fatty. There is probably little convincing evidence to support the current view that subpericardial over-fatness is commonly, or even in any considerable percentage of cases, followed by fatty infiltration. According to my observation, without exception fatty infiltration was secondary to the pronounced form of anæmic obesity. Out of 103 cases, lasting for periods ranging from a few to many years, of extreme polysarcia that have occurred in my experience only five cases gave convincing proof of the existence of fatty infiltration. It has been reported, though rarely, in moderately corpulent

[1] Observations on Fatty Heart; Essay, 1880.

persons; but in such the symptoms are probably dependent upon a true fatty change due to causes other than fatty infiltration. It is in these cases that the renal output is markedly deficient. Again, the question how long subpericardial over-fatness continues as such before it terminates in fatty infiltration, in cases in which this sequel occurs, is unknown; but the usual period must, from personal knowledge, be measured by decades and not by years.

Rarely, however, we meet with exceptions to the rule. The clinical indications of fatty infiltration then appear early, and an alarming condition may soon be presented. The advisability and even the clinical importance of clearly differentiating mediastinal and extra-cardiac conditions from those that distinctly impair its contractile power, as, for example, fatty infiltration, must be obvious. In most instances, at least, the process of fatty infiltration reaches its highest development in the right ventricle, which in marked polysarcia may be completely covered by the deposit of fat, the left being rarely completely enveloped. The interfibrillar depositions are most marked near the surface of the organ. Fat infiltration exerts pressure upon and between the muscular fasciculi, inducing "atrophy and replacement" and embarrassing the action of the heart. This form of atrophy is secondary to and dependent upon the infiltration; but "some cases of primary atrophy of the muscle lead to the secondary development of fat in the connective tissue which is everywhere present and potentially fat-bearing."[1]

A similar mode of origin of fatty infiltration is also exemplified in cases of pericarditis followed by adhesion of the visceral and parietal surfaces of the pericardium. It is conceivable that, as the result of mechanical compression by fat, the lumen of the coronary vessels is narrowed, with consequential defective nutritive supply to the muscle cells. Under these circumstances fatty metamorphosis or degeneration is the result, but this is probably an exceptional sequel.

In the cachexias of carcinoma and phthisis, as well as in the general senile atrophy, a moderate degree of subpericardial over-fatness, fatty infiltration, and true fatty change may all be found in association. In such instances the fatty infiltration may be, in part at least, secondary to atrophy of the muscle cells (part of a general atrophic process), and not the cause of the metamorphosis. At all events it may be assumed that it is only in the extreme grades of fatty infiltration that muscular atrophy from compression by infiltrated fat ("pressure atrophy") ensues.

I shall deal only with cases of fatty infiltration that are the consequence of extreme obesity combined with subpericardial over-fatness.

[1] R. Douglass Powell. Allbutt's System, vol. vi., 893, 894.

The etiology is obviously that of extreme general obesity, particularly the anæmic variety, however the latter may be produced. As a clinical entity, fatty infiltration is not sharply defined, and writers are not in perfect agreement as to the grouping of features on which to base even a reasonably assured diagnosis. Two conditions are among constant accompaniments, marked polysarcia and a feeble heart. It may be pointed out that in the majority of cases it is not until the symptoms of commencing dilatation, often as the result of sudden or unusual muscular exercise or a profound shock, develop that we are warranted in entertaining the belief that fatty infiltration has supervened. The more characteristic clinical indications are urgent dyspnœa upon muscular exercise, præcordial discomfort, pain under the sternum, angina pectoris, cardiac palpitation, arrhythmia, syncope, vertigo, and cyanosis. Various forms and grades of intensity of cardiac arrhythmia are commonly present.

Slight irregularities in which the pulse-waves occasionally vary in size and tension, or an occasional intermittence followed by a brief pause, are not indicative of fatty infiltration; at all events, they are not unfavorable symptoms. I have repeatedly observed slight intermittence and arrhythmia disappear as the result of treatment directed to the over-fatness. On the other hand, marked and constant disturbance of the cardiac rhythm is symptomatic of fatty infiltration and irremovable, although marked improvement may follow an appropriate course of treatment. Kisch[1] pertinently remarks: "Complete irregularity, *delirium cordis*, is to be regarded as a sign of grave disturbance of the heart mechanism which can never be removed, and is sometimes premonitory of sudden death." Cardiac arrhythmia is not, however, peculiar to fatty infiltration. Moreover, there are latent instances in which the pulse is full and strong and not increased in frequency. In a strongly suspicious case under my care at present the pulse is large, regular, and of high tension. With the appearance of ensuing cardiac dilatation the pulse-tension falls and the frequency of the heart's action increases. Irregularity also supervenes. Thus the transition of the disease from the earlier to the later stages may be noted, and these changes that occur in the development of the disease may serve to explain the differences of opinion among clinical observers as to the rate and other peculiarities of the pulse.

Henry Kennedy[2] bases his diagnosis upon a large, full pulse, not increased in frequency, an enlarged area of heart dulness; possibly a soft, systolic murmur over the base.

Bronchial asthma or an asthmatic type of breathing after a full meal, or in the absence of any exciting cause, is frequently observed in fatty

[1] Berliner klinische Wochenschrift, March 18, 1895. [2] Loc. cit.

infiltration. A passive (hydrostatic) bronchitis, with cough and expectoration, is superadded in most cases. Angina pectoris is a recognized symptom. From personal experience, the apprehension of arterial disease, particularly sclerosis of the coronaries, is warranted in the majority of the cases that exhibit angina pectoris. Again, in the tabulated list of cases appended below arterio-sclerosis was present in two of the three fatal instances, but no particular mention of the condition of the coronary arteries was made in the autopsy notes. It may be pointed out here that in none of my cases was aortic regurgitation or adherent pericardium (so far as could be determined) in association, but in two of the five cases reported there were evidences of arterio-sclerosis. In Case I., in which severe attacks of angina still occur, the vasomotor apparatus is greatly disturbed during the seizures. I have had an opportunity to examine this case immediately after the paroxysm. So soon as the pain is over gaseous eructations occur; the heart's action, which is at all times markedly irregular, is unchanged, although the pulse at the wrist becomes almost imperceptible for a short period and dyspnœa is also temporarily aggravated.

The above symptom-group includes the most characteristic features, while other and more unusual manifestations are pointed out in the notes of the subjoined cases. The more or less characteristic features of fatty infiltration may become characterized suddenly, contrary to the general rule, in the course of subpericardial over-fatness which has lasted for a long period of time. Again, the turning-point in such instances may take place at a comparatively early period of life, as mentioned above, and the approximate cause may be a single systemic shock (as childbirth) or repeated shocks, such as occurred recently in a case under my immediate observation.

The notes follow:

Case I.—Mrs. W. H. S., aged forty years, came under observation September 9, 1900. Menstruation had been regular, although somewhat scanty. The patient had always been stout, and now weighs 220 pounds; height, 5 feet 8 inches. Two children born, the second one when patient was thirty-eight years of age. The father died of Bright's disease and one brother of phthisis; otherwise, family history was uneventful. The patient had enjoyed good health until four years previously, when she had a severe attack of influenza. One year later sustained a severe shock through death of a brother, and after the lapse of another year a second shock due to the prolonged second childbirth, which was attended with much hemorrhage. Following up this event exhaustion was extreme and life despaired of; but she slowly recovered, although remaining in a highly nervous condition, with marked arrhythmia and dyspnœa on slight exertion. The death of her child, at ten months of age, plunged her into profound grief, aggravating at the same time the symptoms mentioned before. Four months later I was called. Patient now suffering from cough, asth-

matic breathing, and *delirium cordis;* the pulse small, soft, compressible, and too irregular and intermittent to be recorded at the wrist. The skin surface was pale; no cardiac impulse visible; the heart could not be satisfactorily outlined by percussion, although some degree of enlargement was evident; palpation detected an exceedingly feeble, irregular, and at times intermittent impulse. On auscultation no murmur could be heard, but sibilant râles over the bronchi; a low-toned, wheezing sound on expiration was audible. The urine contained a trace of albumin, and the acidity was slightly increased. Patient extremely nervous and often weeps while in ordinary conversation; slight twitching of the muscles of the face observed almost constantly; has headaches at frequent intervals. May not some of these nervous symptoms be ascribed to uræmic intoxication? is a pertinent question. I may add that similar nervous symptoms, although less marked in two, were also observed in all of the remaining cases herein recorded. This patient has been troubled with cough and a mucoid expectoration after having lain in bed for a few hours at perfect rest. The cause of these symptoms is probably a hydrostatic bronchitis due to increased feebleness of the action of the heart while the patient is at absolute rest.

The patient has had occasional anginoid attacks during the past four months, and more recently has complained almost constantly of pain behind the lower portion of the sternum; exacerbations of præcordial pains also occur, during which she cannot lie down; has great trouble in breathing; awful forebodings; is restless, and the skin grows pale and moist. Stimulants afford relief at times, but the worst attacks demand morphine hypodermatically.

Present Condition (*November* 29, 1900). The attacks of anginiform pains are improving and the heart's action is somewhat more regular and slightly stronger.

December 18*th.* Has had fresh exacerbations as the result of over-exertion and severe angina.

There came under my notice recently a case in which the opinion that fatty change in the heart fibres was associated with extreme fatty overgrowth had been long entertained. The notes of Case II. are as follows:

Case II.—Mrs. J. B., aged fifty years, of temperate habits; has seven children; is still menstruating regularly, although the flow has long since been somewhat scanty. The father and one sister are moderately obese; mother died of phthisis and a sister suffered in early life from acute rheumatism. The patient has had the usual childish affections, and two years previous to consulting me had an attack of influenza. Patient had become progressively stouter from the time she began to bear children up to the date of my first visit to her, at which time the bodily weight was 310½ pounds. Previous to her marriage had been moderately fleshy. For ten years there had been marked dyspnœa and palpitation on exertion, and when I first saw her locomotion was wellnigh impossible, efforts at walking being quickly followed by extreme dyspnœa, cyanosis, and by a feeling of utter exhaustion. Attacks of cardiac asthma rarely occurred, but there were no anginiform pains.

Physical examination revealed a body of enormous proportions. The impulse was feeble and diffuse to palpation. The first sound of the heart was scarcely audible and its action was both intermittent and irregular; no murmurs were present. The limits of cardiac dulness could not be made out satisfactorily, although the left boundary line was found to approach the anterior axillary line, while slight abnormal extension to the right was noted. The pulse was small, compressible, and at times intermittent (like the cardiac action). As the result of an appropriate regimen, including massage until physical exercise could be adopted, the bodily weight was reduced to 185 pounds. At this time, fourteen months after the commencement of the treatment, the patient could readily walk four miles daily, and the heart-sounds were clear and almost regular. The enlargement of the left ventricle was now slight, and the diminution in the apparent size of the heart was due largely to the removal of the subpericardial layer of fat.

It may be questioned whether this case should be classified as one of fatty infiltration in view of the favorable issue that resulted from treatment and a proper regimen. It may, however, be admitted that slight and even moderately extensive fatty infiltration is rarely curable. On the other hand, the outcome thoroughly disproves the existence of fatty change in the muscle-fibres of the myocardium, or fatty degeneration, for when once this grave disease is established it progresses to a fatal ending.

Case III.—A. P. B., aged forty-seven years; occupation, clerk; married; consulted me May 22, 1896. Patient hereditarily predisposed to insanity and phthisis. As a young man, was perfectly healthy until the age of twenty-two years, when he began to suffer from muscular rheumatism, and on two occasions since then has had lumbago. One year prior to consulting me had sciatica, confining him to the house for two days only. Had been growing stouter in a slow and insidious manner for fifteen years; this is attributable to the habitual use of malt and spirituous liquors coupled with the lack of muscular exercise. Present weight, 210 pounds; height, 5 feet 6 inches; user of tobacco in excess. Two years previous to his first visit he began to experience peculiar sensations and discomfort in the præcordia, sometimes inducing a sense of impending death. Muscular exertion was followed immediately by moderate dyspnœa and by pain in the præcordial region, which became worse if exercise was continued, and finally he would be compelled to desist. For at least ten years has had slight winter cough and distinctly asthmatic breathing at intervals. Dyspnœa, cough, and cyanosis have been for a long time, and still are, conspicuous features.

Physical Signs. Inspection reveals corpulent frame, abdomen unusually prominent and pendent, lung expansion somewhat restricted, and the apex-beat of the heart invisible. To palpation the tactile fremitus was normal and the cardiac impulse quite feeble and irregular; the pulse-waves were small, decidedly irregular, and slightly increased in frequency; percussion shows moderate enlargement of the heart, more especially toward the left; auscultation reveals a few dry râles over

larger bronchi; sibilant and subcrepitant râles over bases posteriorly; the heart-sounds are feeble and irregular; there are no cardiac murmurs, but the aortic second sound is slightly accentuated.

The treatment embraced the withdrawal of all the alcoholic stimulants and decided restriction in the use of cigars. Methodical and persistent exercise, including light gymnastics, was enjoined, commencing with a minimum amount and gradually increasing to three and finally to four miles daily. The regimen also included a dietary calculated to overcome the obesity. Improvement in the local manifestations was soon noted, the bodily vigor and endurance were greatly increased, and the bodily weight reduced to 185 pounds. Three years later, on July 29, 1899, the following note was made: Patient still suffers occasionally from slight attacks of angina and from anginoid pains in the intervals. The pains are aggravated by undue exertion, marked nervous disturbance, or acute indigestion. The heart's action is markedly improved inconsequence of treatment, although still irregular and rarely intermittent.

The history of rheumatism in the family as well as in the patient during early life at first gave rise to the thought that the moderate grade of arterio-sclerosis might be of rheumatic origin. The happy effects of treatment upon the arrhythmia, anginiform pains, and the general condition of the patient, however, contradicted this view and emphasized the etiological importance of the habitual use of alcohol and excessive smoking in the case. The action of alcohol in the production of obesity is well known, and the same is true of its causative influence in arterio-sclerosis. It is quite probable, at all events, that the discontinuance of these toxic substances, particularly the alcoholics, had most to do with the rapid and favorable modification of the local and general condition of the patient.

Case IV.—J. V., aged fifty-two years, American by birth, public official, consulted me on July 10, 1900. Patient weighed 225 pounds, five feet seven inches tall, and his habits were nocturnal. Has been an excessive smoker for many years. There is a clear history of rheumatism and gout in maternal ancestry. The personal history furnishes no points of value up to ten years ago, when he began to grow stout, probably in consequence of a change from an active to a sedentary, irregular life combined with a rather free use of alcoholic intoxicants. No acute illness, although dyspnœic on exertion and asthmatic at intervals, with occasional vertigo, until the onset of the complaint for which he applied for treatment. The exciting cause of the latter was probably heat-exhaustion and the improper use of cold water and ice during its treatment. Dyspnœa quickly ensued, accompanied by marked cyanosis and severe anginoid pains in the region of the heart, radiating to the neck and arms, particularly the left. The heart's action became wholly irregular, both in time and volume, and the accessible arteries were somewhat hardened; vertigo and syncope were also prominent features. The physical examination revealed a soft, low-pitched, systolic murmur near the base, with increased loudness of the aortic and pulmonary artery second sound. Dilatation of the ventricles could not be shown

by percussion, owing to the over-fatness. Although a marked improvement resulted from the treatment, which was conducted on lines similar to those in Case III., the symptoms have continued in a milder form.

The predisposing causes in this and the previous case were almost identical. The urgent symptoms (angina, *delirium cordis*, etc.) were ascribable to the acute development of heat-exhaustion, or, since they did not supervene until after the wrong use of hydrotherapy, they may have been excited by it. This is a second instance in which the evidences of infiltration following overgrowth were developed acutely. (See Case I.) These cases go to show that fatty infiltration may be latent, up to a given point at least.

Case V.—A. B. M., aged thirty-six years; no occupation, single, weight 237 pounds (in bath); first applied for treatment February 1, 1899. Is a habitual drinker of intoxicants and particularly "spirits." The mother is rheumatic and there is a family predisposition to obesity. After suffering from childish diseases patient sustained a fall at the age of twelve years; this caused concussion of the brain, confining him to bed for three months. Patient has been stout from the time of his earliest recollection, but in recent years has suffered from vertigo and occasionally syncope, dyspnœa, præcordial discomfort, and anginoid pains, particularly on muscular exercise. The palpable arteries are not hardened; the pulse is soft. On auscultating the heart an intermittence which occurred every third or fourth beat and an occasional false intermittence were noted. Slight cardiac enlargement was elicited by percussion. A faint systolic murmur was heard at the base, though not constantly. At intervals *delirium cordis* was observed. The rhythm was less intermittent and less irregular by far in the standing posture than in the sitting or the recumbent posture. True angina pectoris has not developed. Appropriate treatment for the obesity and the use of cardiac stimulants resulted in a loss of weight amounting to thirty-one pounds and an improvement in the more conspicuous features, particularly the arrhythmia, dyspnœa, and cyanosis. Patient has not been under observation during the past year, although still living.

The cases briefly reported above show pretty clearly that the transition from subpericardial over-fatness to fatty infiltration may be, so far as the symptomatic indications go, abrupt, on the one hand, and too insidious to fix the date of onset of the latter complaint, on the other hand. In reviewing my cases it is seen that the most conspicuous symptoms were marked dyspnœa, syncope, and utter exhaustion on muscular exercise, with cyanosis, præcordial distress, anginiform pains at frequent intervals, and less commonly true angina, well-marked arrhythmia, and even *delirium cordis;* also asthmatic breathing and certain nervous phenomena, particularly emotional disturbance and mental apprehension. A basal systolic murmur was present in two cases and cardiac enlargement was detectable in four. The urine con-

tained a trace of albumin in one (Case I.). In cases in which a murmur over the aortic area was present vertigo and syncope were annoying symptoms. It may be stated here that a basic systolic murmur is also rarely heard in cases of subpericardial over-fatness combined with vigorous cardiac contractions.

With reference to the question of diagnosis in this complaint it must be observed that neither the subjective symptoms nor the objective signs alone or in combination are conclusive, and partly for the reason that they vary considerably in different cases. The presence of the causative condition, extreme pericardial over-fatness, is all-important, and at once gives strength of probability to a diagnosis as one after another of the more characteristic features recited above put in an appearance. An assured recognition of the disease is finally arrived at only after the closest scrutiny of all the symptoms and physical signs coupled with a judicious balancing of the data entering into the previous history of the patient. Should any of the primary affections, other than extreme obesity, that are liable to lead to fatty infiltration be present, this fact would clearly bear upon the case, and the diagnosis of the special form of fatty infiltration under consideration would be precluded. Mere feebleness of the heart is not of great diagnostic value, taken alone. We see this in a variety of conditions and diseases. I desire also to reiterate the fact that slight arrhythmia is not of any value for diagnosis in fatty infiltration.

I have appended a tabulated list of cases of fatty infiltration (unassociated with degeneration of the heart). J. Daland,[1] J. H. Crocker[2] and others have also reported cases, but inasmuch as in all of them fatty degeneration was combined with fatty infiltration they are not included in my table.

[1] Transactions of the Pathological Society of Philadelphia, 1893 and 1894, p. 92.
[2] London Lancet, January 4, 1890.

No.	Name of reporter.	Age and Sex.	Weight.	Symptoms.	Arterio-sclerosis.	Mode of death.	Condition of heart.	Remarks.
1	Satterthwaite[1]	M. 76	357 lbs.	Marked dyspnœa; pulse feeble and intermittent; impulse of heart feeble.	Slight, secondary to nephritis.	.....	.....	Lost 40 lbs.; marked improvement.
2	Satterthwaite	F. 65	181 lbs.	Color dusky, skin bathed in perspiration; pulse 100 to 104; weak impulse at apex; heart enlarged; no murmur.	.....	.....	.....	Lost 10 lbs.; felt much improved.
3	Satterthwaite	M. ...	237 lbs.	Lithæmic; subject to giddiness of head, acute gaseous dyspepsia, and dyspnœa; pulse 100; no intermission; apex-beat feeble, difficult to locate; heart enlarged.	.....	.....	.....	Lost 20 lbs. in two months. General condition much better.
4	W. H. Thayer[2]	M. 64	Compactly built; weight not given.	Previous history was negative. Patient taken ill with weak heart and indigestion. On third day pseudo-apoplectic attacks developed; dyspnœa marked until five days prior to his death; urine normal; no cardiac signs; temperature slightly elevated before death; pulse 100; setting patient up, pulse became irregular.	.....	Rather sudden.	Microscopical examination of a portion of the wall of the left ventricle revealed much interstitial fat but no fatty degeneration; fat deposits and pericarditis were noted and the heart was dilated.	Lungs congested, also peritonitis.
5	David Hunter[3]	F. 77	Quite obese; weight not stated.	Had suffered from chronic malaria and secondary dementia; was confined to her bed for a few weeks (five years prior to death) with pyæmia, swelling of one knee and leg, and dyspnœa; cardiac action feeble for the last two years; was subject to swelling of feet and ankles and cyanosis, but no cardiac bruit detected; after three or four sleepless nights had dyspnœa and unusually cyanosed. She died five days afterward.	Some (chronic interstitial nephritis).	Died rather suddenly (rupture of heart).	Right ventricle ruptured, due to fatty overgrowth, with great general obesity, senility, and adherent pericardium.	
6	R. G. Hebbs[4]	F. 52	Body adipose; weight not given.	Patient was anæsthetized after a careful examination with negative results was made; five minutes after anæsthetization had ceased patient became cyanotic and died after all means of resuscitation had failed.	Present.	Sudden	General fatty infiltration of ventricle walls. (Autopsy).	A typical case of fat-heart.
7	O. Clemow[5]	M. 50	239 lbs.	Patient had led an active life for several years and used malt liquors to excess. When first seen patient complained of dyspnœa and difficulty in walking. Apex-beat barely palpable, normal in position; right border extended about an inch to right of sternum: first sound muffled and indistinct at apex; no murmur anywhere; pulse 72, feeble.	.....	.....	As result of treatment patient appeared lean, "with heart freed from the superabundant deposit upon its surface and between its fibres."	Lungs healthy; patient became ill with hepatic congestion and lost weight; when he recovered Oertel's dietary was instituted, with marked amelioration of the symptoms.

[1] Post-Graduate, New York, March, 1899.
[2] Brooklyn Med. Journ., February, 1890.
[3] London Lancet, December 18, 1897.
[4] Trans. Path. Soc. of London, vol. xlix. p. 33.
[5] Med. Press and Circular, April 29, 1891.

REMARKS. Obviously, from these studies, pure fatty infiltration as a sequel of "subpericardial over-fatness" is an extremely rare condition.[1] Of the three fatal cases given in the table above one ended with great suddenness and the remaining two rather suddenly. It will be noted that in the case of sudden death arterio-sclerosis was associated, and in one of those that terminated rather suddenly the lesions of chronic interstitial nephritis were noted. It is evident that the arteries were also the seat of sclerotic change in the latter case. The comparative frequency of atheroma, particularly of the aortic arch and the coronaries, as an associated lesion in fatty infiltration is undoubted. Thus, Forchheimer noted it in thirty-nine out of 122 cases of fatty overgrowth gleaned from the literature prior to 1889. Of these, atheroma of the aorta occurred in twenty-one and similar lesions of the coronaries in fourteen cases. Kennedy[2] invites attention to the comparative rarity of ossific deposit on the valves, and this view, long since expressed, receives support from the post-mortem findings of the three cases given in the above table, since valve lesions were not noted in a single instance.

Von Stofella[3] observes that when in subpericardial over-fatness the impulse is feeble and the first sound muffled and indistinct the aortic and pulmonary second sounds are of natural loudness, whereas in fatty infiltration the second sounds are feeble. If arterio-sclerosis be associated, then the second sounds may appear to be somewhat accentuated; this was true of Case IV. of my series. In Case III. slightly increased loudness of the aortic second sound was present in the absence of hardening of the peripheral arteries. The murmurs present in fatty infiltration have their usual seat in the aortic area, although they may also be heard in the mitral zone. When met at the base of the heart they are attended with troublesome cerebral symptoms, syncope and vertigo in particular. I have had no personal experience to confirm the view that this is also true of mitral murmurs in this affection. Murmurs are not constant in this disease, having been present, as previously stated, in but two of the cases reported above. They are not due to chronic valvulitis. Says Forchheimer,[4] speaking of the bruit in fat-heart: "The bruit which is heard must, I take it, be due either to the irregular contraction of the muscular fibres of the heart or it must be hæmic in origin." The evidence is overwhelmingly against its being due to valvular lesions, since these are the exception in cases of fatty infiltration. Personal observation tends to confirm the belief that I have long held regarding this question; it is that the bruit heard in this affection may have different causes, many of which are as yet unknown. It can

[1] The writer would be indebted to anyone who will furnish additional cases.
[2] Loc. cit.
[3] Wiener klinische Wochenschrift, 1893, vi.
[4] Loc. cit.

scarcely be doubted, I think, that the murmur that appears in the advanced stages of the disease is at times due to relative incompetency, since many other indications of a dilated heart are in association. In some cases the murmur heard over the aortic area is attributable to an associated chronic nephritis, since the presence of a basic systolic murmur in the latter disease is a matter of common observation. Again, the bruit may be hæmic in origin or due to an abnormal, relaxed state of the heart-muscle or to weakness or insufficiency of the papillary muscles.[1] The moderate degree of enlargement in four of my cases showed itself by an increase of dulness more to the left than to the right and more in the transverse than in the vertical direction. It is probably occasioned principally by dilatation which may be preceded by and associated with some hypertrophy caused by the over-fatness. The rôle played by the infiltrated fat as well as the abnormally great subpericardial fat deposit must also be taken into account. It is always exceedingly difficult and sometimes impossible to establish the boundary lines of dulness by percussion, owing to the extreme corpulency. Not to be neglected in the treatment of these cases are measures directed to the removal of the over-fatness, the accomplishment of which enables us not only to determine accurately the size of the heart, but also to improve both the cardiac action and general condition of the patient.

A fatal termination is often due to spontaneous rupture of the heart, as occurred in all of the cases given in the above list that came to necropsy. This accident, however, does not, as shown by the clinical notes of Cases IV. and V. in the above table, invariably cause sudden death.

MULTIPLE NEURITIS AND HÆMATOPORPHYRINURIA FOLLOWING THE PROLONGED INGESTION OF TRIONAL.

By Stuart Hart, M.D.,
ASSISTANT PHYSICIAN, DEPARTMENT FOR NERVOUS DISEASES, VANDERBILT CLINIC, NEW YORK.

That poisoning by trional is an exceedingly rare condition is readily borne out by the fact that it has been freely administered in thousands of cases in the past decade for insomnia, as a sedative, and as an antipyretic in a wide range of diseases, and is generally considered a reliable and effective remedy, without untoward effects. I have been impressed by the readiness with which patients acquire the trional habit and the difficulty of inducing them to abandon its use. Their attitude has, I think, often been determined by the physician who first

[1] See Schroetten, 'Ziemssen's Hand-book, vol. i. p. 26.

administered it to them with the assurance (which his experience has led him to believe) that trional is a safe, harmless drug, or at least as little harmful as any of our hypnotics.

While trional is an exceedingly useful drug, I believe we should always bear in mind its possible bad and even fatal effects, and for this reason I have thought it worth while to report a case of trional poisoning which came under my observation, together with several somewhat similar cases which I have been able to collect from the literature.

These cases are also interesting in that they bring vividly before us the etiological relationship existing between the ingestion of another of our synthetized organic drugs and the development of nervous affections. It is a well-recognized fact that the occurrence of neuritis has notably increased since the introduction and general use of the coal-tar products as remedies.

The following cases collected from the literature have certain points of interest not unlike my own case:

Schultz[1] reports a fatal case in a woman, aged fifty-four years, who took a gramme of trional a day for one month. After two weeks she had epigastric pain, vomiting, and loss of flesh and strength. A few days before death hæmatoporphyrin appeared in the urine.

Hecker[2] reports a case of "progressive paralysis" following the use of trional. There was unsteady gait, disturbances of speech, and general weakness. The patient recovered.

Reinicke[3] had a patient who took trional for four months. She had, as a result, headache, vertigo, epigastric pain, and temperature of 101.6° F. The urine was black and contained albumin, casts, and blood. She recovered after the removal of the drug.

Bresslauer and Joachim,[4] while using trional in a very large number of cases, had no severe cases of poisoning, but occasionally noted anorexia, constipation, giddiness, ataxia of the lower extremities, and oliguria.

Young[5] noted trophic changes in the skin of a woman, aged thirty-five years, which was caused by the continuous use of trional in 15-grain doses.

Herting[6] reports a fatal case in a patient, aged thirty years, who had taken tetronal and sulphonal and later a gramme of trional daily for a considerable period. The urine contained hæmatoporphyrin.

Gierlick[7] saw a patient who, after the use of trional, had tremor and ataxia in the arms and legs, depression, and loss of memory. The reflexes were normal; there were no changes in sensation, no trophic disturbances, and no hæmatoporphyrinuria. All these symptoms disappeared two weeks after the withdrawal of trional.

A. Claus[8] instances a child, aged five years, who after 10 grains of

trional walked unsteadily. A reduction in the dose caused a disappearance of the symptoms.

Stockton[9] reports a case of acute ascending paralysis which was fatal in a woman, aged twenty-seven years. Paralysis began in the lower extremities and advanced upward. Hæmatoporphyrin was present in the urine. The etiology was not clear, but the patient had taken small amounts of trional.

Putnam[10] saw a case of multiple neuritis following the use of trional and sulphonal. There was advancing paralysis, muscular tenderness, great emaciation, and death from the gradual involvement of the nerves of the heart and the respiratory muscles. The autopsy showed no changes in the cord, but a well-marked degenerative neuritis.

The history of the case which I wish to present is as follows:

Mrs. ——, aged fifty years, born and bred in New York City, had for twenty years been more or less of a chronic invalid, suffering from nervous depression, insomnia, and gastric disorders. According to her own statement, she had never had a wish, which money could gratify, unsatisfied. She had consulted many of the leading practitioners of medicine in this country and various parts of Europe, had submitted to all kinds of cures and systems of treatment, and had taken a great variety of drugs. At one time she had taken a large amount of trional and was continuing its use when she first came under my care; this she was induced to gradually diminish and finally gave it up entirely for a period of several months. At this time she was neurasthenic to a marked degree, but beyond a moderate anæmia there existed no organic disease.

About the middle of February, 1899, she suffered from obstinate insomnia and resumed taking trional, limiting the dose to 15 grains every other day, with an occasional intermission of three or four days. This continued until the evening of April 20th, when quite suddenly she developed pain in the abdomen of a severe colicky character, with extreme nausea and vomiting. At this time the temperature was normal and there was no abdominal tenderness or distention. The vomiting and pain continued for several days, rendering it necessary to interdict all food by the mouth and to resort to rectal alimentation. At this stage the case suggested the possibility of some acute poisoning. No further symptoms, however, could be elicited, but the administration of trional was stopped, and to control the severe pain morphine was used hypodermatically. On April 25th the heart became intermittent and there was developed a systolic murmur at the apex, transmitted to the left. At the same time the urine, which had been hitherto normal, became a dark red and contained a trace of albumin and a few granular casts. On the next day she passed only twelve ounces of nearly black urine, of a specific gravity of 1023, acid, with a small amount of albumin, no glucose, many granular casts, leucocytes, and small cuboidal epithelium; no blood. From this specimen I was able to separate by the usual methods[11] a substance giving the characteristic spectrum and color of hæmatoporphyrin.

The abdominal pain still continued and she complained of it bitterly.

The pulse increased in frequency and would frequently intermit; the heart action became weak and irregular, the apex murmur loud and rough, and there was added a loud murmur of aortic insufficiency. The area of cardiac dulness was moderately increased to the left. On April 30th she complained of tingling and pricking sensations about the vulva. The left knee-jerk was absent and the right was elicited with great difficulty. May 1st there was tingling in both arms; both knee-jerks were absent. On May 2d the patient complained of severe pain in the left elbow and weakness of the legs. The surface of the extremities showed diminished sensibility to tactile and thermic stimuli, but no absolute anæsthesia; this was particularly noticeable in the soles of the feet. The pain in the extremities increased, and two days later some loss of power was evident in the extensor groups of the left arm and left leg, but no actual paralysis. All the muscles reacted to Faradism, but the extensors only when a very strong current was employed. For several days there was a slight, irregular elevation of temperature, ranging from 99° to 101° F. By May 12th a well-marked drop-wrist (double) and drop-foot (double) had developed. The flexors and extensors of the wrists and ankles failed to respond to the Faradic current. Tested with galvanism the extensors showed the reaction of degeneration, while the flexors responded slowly and only to a strong current. There was marked weakness of the extensors of the legs, but they all reacted to strong Faradism. While at rest the knees were held in the position of flexion. The surface of the body (particularly of the extremities) was so hypersensitive that it was necessary to keep the bed-clothing from touching the skin. There were periods of delirium, with hallucinations of time and space. She complained of excruciating pain in the extremities and abdomen and of slight girdle sensation and constriction about the chest. Loss of weight was commencing to be very apparent. The urine contained a trace of albumin and a few casts, merely a trace of hæmatoporphyrin. Heart slightly improved in rhythm and force; murmurs still present.

For a few days the patient remained in the condition just described and then began a slow, tedious improvement. Something over a week later she had recovered some slight, voluntary power of extension over the fingers and toes, although to the electric current the muscles still showed the reaction of degeneration, and it was many weeks before the extensors reacted normally to the galvanic current and contraction to Faradic stimulation was not re-established for three months—long after voluntary contraction was well advanced. There were moderate contractures of the ham-strings and Achilles tendon in spite of the use of passive motion and the application of correcting apparatus. These contractures gradually disappeared when the patient was able to use her hands and relearn to walk. There was considerable ataxia at times, but probably only such as would be accounted for by muscular weakness. The emaciation was extreme, the weight falling from 153 to 90 pounds. After some weeks the kidneys regained their normal condition. The heart slowly returned to the normal, leaving no evidence of valvular disease or enlargement. For a period of ten days there was a marked œdema of the lower extremities, which, however, disappeared with the improvement in the action of the heart. At the end of a year from the onset the patient was just beginning to walk without assistance. The recovery has since become complete.

This case brings out a number of points of special interest. The whole amount of trional ingested was not what one would ordinarily consider excessive—*i. e.*, about thirty doses of 15 grains each, a total of 450 grains for the two months. The onset presented the picture of a case of acute gastro-intestinal poisoning. Following this there was an acute degeneration of the kidneys and the presence in the urine of hæmatoporphyrin—a substance which is usually associated with poisoning by sulphonal and trional. The first of the nervous manifestations was a neuritis of the vagus and a subsequent trophic disturbance in the heart muscle resulting in dilatation and valvular insufficiency. The nature of the heart lesion seems clear in the light of the subsequent course, for with the improvement in the muscular tone the dilatation and valvular incompetence entirely disappeared, leaving a normal heart. Among other trophic changes may be noted the extreme emaciation and a marked thickening of the tissues about the joints of the fingers, which still remains.

The more marked affection of certain definite groups of muscles—*e. g.*, the extensors of the wrists and feet—suggests the selective action of trional for certain nerves or groups of cells in the anterior horns of the cord, not unlike that of the metallic poisons.

The nerves recovered their function in the same order in which they were impaired, viz., first the vagus, next those of the extremities of the left side of the body, and lastly those of the right side.

In view of the similarity in chemical constitution of trional and sulphonal it is not surprising that their toxic effects should have a close parallel; this is borne out by the manifestations of a number of cases of sulphonal poisoning to be found in the literature. As to how trional produces its various injurious effects is a question of some doubt. One theory[7] ascribes to it a specific toxicity to the cells in the anterior horns of the spinal cord. In a case of sulphonal poisoning in which there had been weakness and ataxia of the lower extremities Helwig[12] reports an autopsy showing a degeneration of the cells of the anterior horns of the lower cord.

Another theory is that trional causes a very slow oxidation of the cells of the central nervous system, and this when long continued produces permanent changes, the manifestations in the stomach, bowels, and urine being secondary. It seems to me, however, that our theory must be even broader than this in order to include cases like that of Putnam,[10] in which on autopsy the lesion was found entirely confined to the peripheral nerves, the cord and brain being found normal.

Hæmatoporphyrin has been described as occurring in a variety of conditions associated with lesions of the nervous system. Ogden[13] reports hæmatoporphyrin as present in a fatal case of post-diphtheritic paralysis and Nakarai[14] isolated the pigment from the urine of six

cases of lead poisoning. In sulphonal poisoning its presence has been frequently demonstrated. The exact cause and mode of its production are still unknown. By some it is claimed that the original toxic substance acts as a direct irritant to the kidneys; by others that the function of the kidneys is modified by changes in the central nervous system. My own cases would argue for the latter theory, as the change in the urine did not appear until some time after the development of the nervous symptoms and a considerable period after the withholding of the drug.

Some years ago Morro[15] demonstrated that trional had a cumulative action, and this should be borne in mind when administering the drug for an extended period. It should not be given continuously, and while being used the bowels and kidneys should be kept active. To aid in the elimination of trional Goldman[16] recommends that citric acid be exhibited with it, and suggests that, if the urine becomes dark or cloudy, bicarbonate of soda and the drinking of aërated waters should ward off more serious developments.

References.

1. Deutsch. med. Wochenschr., Leipzig, February 15, 1894.
2. Centralb. f. Nervenheil. u. Psych., August, 1894.
3. Deutsch. med. Wochenschr., Leipzig, March 28, 1895.
4. Centralb. f. d. gesammt. Therapie, Vienna, August, 1895.
5. University Medical Magazine, 1896, p. 715.
6. Allgem. Zeitschr. f. psychiat. u. psychisch.-gericht. Med , Berlin, 1894, B. li., H. 1.
7. Neurol. Centralb., Leipzig, 1896, xv. p. 770.
8. Internat klin. Rundschau, 1894, No. 45.
9. Transactions Association American Physicians, 1900, vol xv. p. 6.
10. Transactions Association American Physicians, 1900, vol. xv. p. 10.
11. Salkowski. Zeitschr. f. Physiol. Ch., 1891, xx. p. 297.
12. Hosp. tid , 1892, 3, R. 39.
13. Boston Medical and Surgical Journal, February 24, 1898.
14. Deutsch. Arch. f. klin. Med., lviii. p. 165.
15. Deutsch. med. Wochenschr., 1894, No. 34.
16. Therapeutisch. Monatsheft., Berlin, 1894, No. 11.

REVIEWS.

IMPERATIVE SURGERY. By HOWARD LILIENTHAL, M.D., Attending Surgeon to Mount Sinai Hospital, New York City. New York: The Macmillan Company.

THE tendency which in modern times has led to the fine subdivisions of labor has caused the creation of specialisms in science. Specialism of the proper sort is very useful. It develops individuals notable for skill and distinguished for exact and profound knowledge. It leads to the accumulation of a multitude of careful observations. It stimulates authorship, experiment, and discovery. As Oliver Wendell Holmes says: "Specialists are the coral insects which build up the reef."

There are not wanting signs, however, that specialism has gone too far, and we know positively that not a few specialists have no proper equipment for their responsible occupations. A man should not be allowed to proclaim himself a specialist any more than Wilkins Micawber, Jr., could proclaim himself a lawyer; he should become a specialist in the natural course of things, because of peculiar opportunity; from breadth of information, not from narrowness; because of much knowledge, not because of the absence of it. A man who takes up an exclusive specialty soon after graduation, without having had the training of some years of general practice, almost inevitably becomes the narrow man, the one-sided man, the man who unduly exalts his particular line of work and unjustly depreciates the work of others.

The general practitioner is sometimes too general. He is often not special enough. He usually resolutely declines to invade the domain of surgery, and in this self-abnegation, as a general rule, displays wisdom and an accurate estimate of realities. Surgery can be done well and quickly only by one who has had considerable experience and has trained himself by patient toil; but the general practitioner ought to be capable of meeting successfully, if not brilliantly, the common emergencies of surgery.

We do not mean that he should become a surgeon. We particularly would not convey the idea that he should ever undertake a difficult operation when no real emergency exists. What we do mean is that he should be able to apply the proper treatment—operative treatment, if necessary—to conditions which threaten life unless there is prompt intervention.

Some general practitioners do accident surgery admirably, and we encounter these men particularly in mining and manufacturing regiont and in railroad towns. Many general practitioners will not attempt surgery even in an emergency. Numbers do attempt it, and bungle in the trial. Dr. Lilienthal is persuaded that general practitioners should be able to cope with surgical emergencies, and he has written this book to aid them. He addresses his book to: "The practitioner of general medicine who rarely takes up the scalpel; the specialist whose path seldom leads him to the operating-room, and the recent graduate who,

although versed in the lore of books and lectures, has seen but little surgery at close range."

The author says of his book that "it deals only with the diagnosis and treatment of conditions which demand immediate operative measures, and it presupposes the absence of a surgeon and the impossibility or inexpediency of removing the patient or of waiting for expert assistance." Lilienthal's views as to the duties of the conscientious physician are as follows:

"Confronted by a grave emergency, where the life of a human being seems to hang upon the possibility of relief through surgical skill, the conscientious physician, when he feels that he is not sufficiently versed in the art and method of operating, will seek the assistance of an expert. Should time and place conspire, however, to make the presence of a surgeon impossible, the entire responsibility devolves upon the one who may chance to find himself in charge; and unless he is willing to assume the risks of hesitation he must act the part of a surgeon and perform, to the best of his ability, the work before him. Again, should the crisis be one not of life or death, but where lingering disease or lasting deformity will probably follow delay, it is the clear duty of the physician to act and tide over the critical period."

These opinions are in line with the well-known views of the elder Senn, who has said (*Pacific Medical Journal*, August, 1899): "Every physician qualified to practice his profession should have the necessary knowledge and manual dexterity to perform, at a moment's notice and with the simplest instruments and limited assistance, all life-saving operations in all cases in which prompt action is necessary to meet the urgent indications. In large cities the medical practitioner can secure the services of a professional surgeon without much loss of time, but occasionally he will be confronted by a case in which he has to act in order to save life. But the mass of general practitioners throughout the country are frequently thrown upon their own resources, and must be prepared to perform the most difficult operations when the loss of time necessary to secure surgical aid would jeopardize the life of the patient. A fair percentage of the practice and income of the village and country practitioners consists of and is derived from emergency work.

"The average medical student is more interested in surgery than in medicine, and I am sure the surgical training he receives ought to qualify him to practice emergency surgery with credit to himself and benefit to his patients. Most of the accident cases and surgical diseases requiring prompt operative treatment, as a rule, first come to the attention of the general practitioner. In accident cases the first aid rendered often determines the fate of the patient. Neglect and mistakes made in such instances are often difficult to balance and correct later. The general practitioner must be familiar with surgical diagnosis and must acquire surgical technique sufficient for him to act timely, wisely, and safely in all surgical cases in which immediate interference is an absolute necessity to save life or to protect the patient against remote disastrous complications. No physician should receive a diploma or practice his profession unless he is fully qualified to meet these requirements."

Lilienthal's book in most respects is admirable. The descriptions of operations are terse and clear, the directions are definite, and the cuts are not only beautiful, but really show something. The book comprises over four hundred pages, and the text is illustrated with more

than one hundred and fifty illustrations, most of them being "from photographs or drawings made during the progress of actual work in the author's practice."

In Chapter I. he enumerates the instruments of surgery and describes their uses, speaks of the materials for dressings and their preparation, sponges and their substitutes, sterilization, splints, and other rigid dressings. In the subsequent chapters he considers wounds and their treatment, the performance of an operation in a dwelling-room, the healing of wounds, special forms of infection (*i. e.*, erysipelas, phlegmon, abscess, furuncle, carbuncle, malignant pustule, acute osteomyelitis, acute suppurative arthritis), and the drainage of suppurating joints. He then proceeds to discuss wounds, injuries, and diseases of the head and face, the neck, the extremities, the thorax, and the abdomen; intestinal obstruction, acute appendicitis, suppuration of the liver and gall-bladder, strangulated hernia, acute diffuse peritonitis; wounds, injuries and diseases of the rectum and anus; of the genito-urinary organs of the male; of the generative organs of the female; of the eye and orbital region, and of the ear and mastoid region.

In some instances we think Lilienthal forces the issue and goes a shade too far. It seems scarcely proper to advise a general practitioner who has not had any surgical training to perform gastrostomy, intestinal resection, œsophagotomy, and the radical cure of hernia after the relief of a strangulation. Were he to do these things he might become a veritable and ghastly emergency himself. We feel the same way in regard to appendicitis unless there is an abscess adherent to the belly wall. In this connection we refer the reader to the impressive remarks made by Weller Van Hook in one of the best papers we have ever read on the "Technique of Operations for Acute Appendicitis" (*Journal of the American Medical Association*, February 20, 1897). He says that a person who has never operated, or has only occasionally operated, should be persuaded that the operation for appendicitis is by no means always easy and simple. He considers it a matter for surprise and almost for horror to find that the majority of writers give an opposite impression, or, like Sonnenburg, assert that the operation is simple. It is Van Hook's positive conviction that one hundred cases of acute appendicitis will show a higher percentage of recovery under medical treatment, with incision of pointing abscess, than will one hundred like cases operated upon by one hundred surgeons, or even by twenty surgeons, who are gaining their first experience.

In spite of our disagreement with some of Dr. Lilienthal's contentions as to what cases are to be considered as emergencies justifying immediate surgical attack by the attending physician, we regard the book a timely one, and also esteem it as a carefully-written, entertaining, and instructive production. J. C. Da C.

A Treatise on Mental Diseases. By Henry J. Berkley, M.D., Clinical Professor of Psychiatry in the Johns Hopkins University; Chief Visiting Physician to the City Insane Asylum, Baltimore. Pp. 601. New York: D. Appleton & Co., 1900.

The *Treatise* of Dr. Berkley, as the contents show, is an important study of the literature and pathology of mental diseases. Appearing

during the closing year of the century, it may be classed with other recent books upon the same subject that contain the last and best words that have been written during this wonderful cycle. As the close of a century is suggestive of retrospection, so the opening of a new one admits of a note of comparison between the beginning of the old and the new and stimulates a hope of greater acquisition of knowledge during the period on which we have now entered. At the beginning of the last century only two or three efforts of a primitive character existed in America for the care and treatment of the insane. During the latter half of this period only was an approach made toward the scientific study of mental disease. The earlier insanity literature (Pinel and Esquirol) was devoted mainly to the psychical manifestations of mental disease. Such gross pathological lesions only as were apparent to the unassisted eye were described. The histological studies of the structure of brain and nervous tissues in recent years, supplemented by the revelations of the microscope and improved technical methods, have materially aided investigations of the pathology of mental disease as well as those affections of the nervous system that are unattended with morbid mental conditions. This advance may be said to have had a beginning during the latter third of the century just closed. There seems to be recognized at last a field, with well-defined limitations, within which the alienist, the neurologist, and the pathologist may each, in his own way, during the coming century engage harmoniously in the solution of the problems that confront him, unvexed by jealousies and contentions.

Dr. Berkley has clearly shown in his book the co-ordination and relation of pathology and psychiatry, which may be stated to comprise the two grand divisions of the work. Ninety-five pages are devoted to histology of the central nervous system and general pathology. Much of this portion is of a high technical character, and while it may not be fully appreciated by every reader, yet on examination it must be conceded that all of the studies have been carefully made along approved lines and that the conclusions are logically correct. The portion of Part II., devoted to Special Pathology and Pathology of the Cerebral Vessels, is of interest in these days of the discussion about the neuron and intracranial circulation. Investigations in cell pathology have been advanced by improved methods of staining or experimental technique, which are explained in detail, so that the author confidently assumes "the veil is being slowly withdrawn and we are able to distinguish the true from the artificial lesion." While the pathologist by mechanical and other devices may thus bring us in close touch with the very centres from which psychic action proceeds, yet notwithstanding the ambitions of science, we have no expectation the chasm will be crossed or that the impenetrable secret of psychical force will be readily yielded, though it may continue to be a subject for theorizing and speculation.

The important chapter on Pathology of the Cerebral Arteries and Veins is a practical demonstration of the effect of irritant poisons, as alcohol, syphilis, and other toxins, in the production of arterio-sclerosis and endarteritis. It is illustrated by several plates in colors showing the various degenerations that result from toxic and other agencies which affect the middle and inner coats of vessels, the lumen, and surrounding tissues, and go far to demonstrate the manner in which the

nutrition of the nervous mass may be affected, and account for other clinical aspects of mental disease.

The remainder of the book, or over four hundred pages, is devoted to the symptoms, causes, and therapy of mental diseases. The author recognizes the difficulties surrounding an accurate classification of the many forms of insanity and the confusion that has resulted. There are objections to a nomenclature founded upon clinical symptoms, yet during the course of the disease the psychical or mental manifestations may be the only evidence of any departure from the normal state. The "etiological basis is equally defective, as the causation is frequently unknown," and from it various forms may be evolved, and causes so called are too speculative to have value. A classification based upon the morbid anatomy might be considered valuable if a sufficient amount of knowledge had been already accumulated. As every writer has assumed to himself the privilege of conforming a nomenclature to suit his own views, the author has made a venture in this direction in parts of his book. For instance, he uses terms to describe forms of insanity as having an adjective sense, namely, "syphilitic insanity," "alcoholic melancholia," "alcoholic epileptic insanity," "menstrual insanity," "religious paranoia," etc. Many of these terms and other forms so called used by writers are misleading and only add to the existing confusion by conveying an impression that they stand for distinct entities or diseases, whereas they are only stages or symptoms that appear in the course or progress of a case of insanity or common to many forms from divers causes. The general adoption of such a nomenclature would be a warrant to assign an insanity to any supposed cause, illustrating rather the theories and resources of a writer than results of clinical study. We have supposed the tendencies in recent years were rather to restrict than expand the nomenclature. We forbear criticism, however, as the author has introduced so many good and helpful forms and special studies, as "insanities without ascertainable alteration of brain substance," "insanities consecutive to organic lesions of the cerebral substance," "intoxication insanity," "insanities following bacterial and toxalbumic poisoning," "insanities following autogenic poisoning," "insanities of the psychical degenerate," and those accompanying or following "constitutional neurosis."

The author arranges the several forms of mental disease under four groups as most convenient, and, we may add, most helpful for study, viz.: Group I. *Mental diseases without ascertainable pathological alteration of the brain substance.* Group II. *Mental diseases sequential to ascertainable alteration of the brain substance.* Group III. *Insanities due to inherited or acquired mental instability.* Group IV. *Studies of complete or incomplete retardation of the psychical (and physical) development.*

This grouping is strictly correct and comprehensive. Under the first can be included all cases of mental disease having an origin in neurasthenic conditions (from whatever causes they may arise), sepsis, and toxic agencies that result in disordered mental manifestations. In this group may be placed acute insanities complicated with delirium, acute delirium, and acute delirious mania. This method of grouping is also most helpful in forming an opinion as to the prognosis of a case, the first group furnishing the greatest proportion of recoveries in hospital reports. It may be further said of this group that, notwithstanding the

acuteness of the symptoms, when death takes place little or no trace of disease is discovered. Whatever evidences of disease may have existed before death they disappear subsequently or cannot then be discovered. The author has properly emphasized and described a large number of mental affections belonging to this group, which is a marked feature of this and other recent books on mental disease. While the pathologist has been engrossed in the examination of cells and cutting sections, less attention, in comparison with the importance of the problem, has been given to the condition and quality of the circulation and functional disturbances of the bodily organs which have so much to do with the best treatment of the insane. There are unquestionably many cures directly effected by medical treatment, and we are waiting for the physiological chemist rather than the pathologist to tell us what has been done to restore our patient and how the methods may be improved. The field is open, but this phase of the subject has scarcely been touched even in the recent books.

This volume, presenting honestly the results of scientific work, much of it done or verified by Dr. Berkley, should be welcomed and its contributions added to the general stock. It may be said of all insanity books that their authors and their readers deal with complex and unknown conditions that are not yet susceptible of mathematical demonstration. As a consequence, a personal element may even enter here which impairs the value or estimate to be placed upon criticism.

In a "note" or preface Dr. Berkley makes the announcement that "the absence from English literature of a comprehensive practical work on mental diseases has led the writer to prepare this treatise, embodying a consideration of all the principal forms of psychical disturbance." Notwithstanding that under the head of "Literature," which follows many chapters or parts, 432 references to Continental writers and only eighty-three belonging to English-speaking people are made, the assumption which is implied that an "absence" or even dearth actually exists will hardly be received without dissent.

J. B. C.

DEUTSCHE MEDICIN IM NEUNZEHNTEN JAHRHUNDERT. Säcular-Artikeln der Berliner klinischen Wochenschrift. Herausgegeben von C. A. EWALD und C. POSNER. Band I. Berlin: Verlag von August Hirschwald, 1901.

GERMAN MEDICINE IN THE NINETEENTH CENTURY. Edited by C. A. EWALD and C. POSNER.

THE articles contained in the volume before us are reprinted from the *Berliner klinischen Wochenschrift*. All of them treat of some technical subject, especially referring to the histological aspect. Attention has been called so frequently and in such various places to the wonderful advances made in the past century that special works treating of advances of special peoples have a local and also a general value. While the title indicates an especial attention to the German contributions to the medical sciences, the editors are careful to state in their preface that a narrow reference to the work of Ger-

man physicians alone would give a very imperfect view of the progress of science, and while they point with pardonable pride to the contributions of Germans to philosophy and natural history, and especially to medical science, they admit the equal value of other contributors. We cannot undertake to review the articles in the volume before us. Their character may be judged by a few of the titles. Virchow contributes a short discussion of the influence of new names and new points of view in determining progress in pathology, and shows the importance of proper names for newly discovered conditions and for new aspects of known conditions, instancing some of the diseases or pathological processes which he himself discovered. Hirschberg's article on the development of ophthalmological knowledge in the nineteenth century is long and interesting and will be consulted by all who have a special interest in this study. Ewald in discussing auto-intoxication, Ponfick in an account of the development of knowledge regarding inflammation, Schleich in a paper on local anæsthesia and narcosis, Frosch in a contribution on the plague in the light of recent investigations, Flemming in a paper on cell-division, Babes in a discussion of rabies from the beginning to the end of the nineteenth century, contribute interesting accounts of subjects of unusual importance and interest at the present time or of topics that have assumed new importance from changed points of view.

Taken as a whole, the twenty-six articles in the present volume are most interesting expositions of the development and present status of knowledge regarding a variety of topics. A. S.

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson, B.A., M.D., LL.D., Professor of Surgery in Cornell University Medical College, New York; Surgeon to the New York and Hudson Street Hospitals, etc. Third edition, revised and enlarged, with 336 illustrations and 32 plates in monotint. New York and Philadelphia: Lea Brothers & Co., 1900.

The present edition is issued about a year after the appearance of the second edition. It is evident from this fact that the subject of fractures still has a firm hold on the profession in spite of the allurements of operative surgery. It also speaks well for the value of the book itself.

The subject of fractures was almost wholly rewritten for the edition of 1899. The question of operative reduction in the treatment of dislocations was also discussed.

In the present edition numerous additions have been made, one of the most important being traumatic hæmatomyelia in reference to the prognosis and treatment of injuries of the spinal cord.

Twenty new illustrations have been substituted or added, and the number of plates has been increased from twenty to thirty-two, with nineteen new figures, all but one being reproductions of skiagrams.

The subject of fractures is treated in 401 pages, and while as much is given as the space permits there is still need for a somewhat more elaborate treatment of some parts. The literature on the subject of

fractures has been tremendous and allusions to all the new suggestions is impossible, still we would have liked to have seen the operative treatment of fractures discussed more in detail. It is one of the active issues of the day. The numerous additions of new skiagrams show that attention has been devoted to that method of examination. In the treatment of fractures of the elbow-joint by full flexion the author states that it is no more convenient than rectangular flexion and gives no more security against displacement. While we believe he is nearly or quite right in his conclusions, it still seems a rather cursory way to treat a subject in favor of which so much has been written in recent years. In the chapter on Fractures of the Skull those of the base are hardly more than alluded to. It is to be regretted that the excellent work of Charles Phelps on the *Traumatic Injuries of the Brain* is not even mentioned. The chapter on Dislocations of the Hip contains no reference to the recent work of Oscar H. Allis. In importance it is at least equal to if not greater than that of Bigelow's. McBurney's method of reducing a dislocation of the shoulder with fracture is given, but not Allis' method of reducing a dislocated hip with fracture. In the treatment of congenital dislocations of the hip Lorenz has discarded his own operations and now advocates forced extension and reposition. While some omissions occur, they are not sufficiently numerous to mar the work, and, taken as a whole, we like it perhaps better than any other treatise on the subject in our language. The method of treatment of the various subjects is perfectly clear and intelligent. The information contained is extensive and the advice given is sound. It is evidently the work of an accomplished surgeon of wide experience and good judgment, and is expressed in a style free from verbosity or obscurity. It is a volume which should find a place on the shelves of every practitioner who is called to treat fractures or dislocations.

G. G. D.

NORMAL HISTOLOGY. By EDWARD K. DUNHAM, Ph.B., M.D., Professor of General Pathology, Bacteriology, and Hygiene in the University and Bellevue Hospital Medical College, New York. Second edition. 318 pages, 244 illustrations. New York and Philadelphia: Lea Brothers & Co., 1900.

OWING to the important relation of the study of histology to both normal and pathological anatomy, it is desirable that the student of medicine begin this subject early in his course. It is, therefore, of great consequence to his future progress that the method of his study be carefully considered. It is, for example, of the utmost importance that the broad, fundamental principles of the science be inculcated and that proper attention be given to the cultivation of the scientific habit of mind.

The volume under discussion has evidently been written with full appreciation of these facts. An introductory chapter prepares the student for a consideration of the distinctions between the different elementary tissues as well as for an account of the cell and its properties. The succeeding chapters, which follow in what might be called the

usual order, constitute a concise exposition of the known facts of the science.

A criticism that might be made is that the text, in many places, is rather too brief and lacking in emphasis of salient points. This is notably true of the chapter dealing with the liver, where clearness has been sacrificed to conciseness. This is a fault in that it presupposes upon the part of the student a knowledge of the subject which usually he does not have.

The book is adequately and beautifully illustrated, many of the 244 engravings being original.

An excellent chapter on Histological Technique constitutes Part II. of the volume. The typography is in line with the usual high character of the Messrs. Lea Brothers & Co.'s publications. J. C. H.

PATHOLOGY AND MORBID ANATOMY. By T. HENRY GREEN, M.D., F.R.C.P., Physician and Lecturer on Clinical Medicine at Charing Cross Hospital, and Senior Physician to the Hospital for Consumption and Diseases of the Chest, Brompton. Revised and enlarged by H. MONTAGUE MURRAY, M.D., F.R.C.P., Physician to the Out-patients and Lecturer on Pathology and Morbid Anatomy at Charing Cross Hospital. Ninth American, revised from the ninth English edition, by WALTON MARTIN, Ph.B., M.D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, Columbia University; Attending Surgeon to the Out-patient Department, Roosevelt Hospital. 565 pages, with 4 colored plates and 339 illustrations. Philadelphia and New York: Lea Brothers & Co., 1900.

THIS well-known, very useful, and readable text-book, which originally included only general pathology, has met at the hands of its revisers a metamorphosis in which it has lost none of its original value and interest, though transformed into a complete treatise upon pathology and morbid anatomy. It has, moreover, in a most remarkable manner been made to include an immense amount of new material without appearing to have lost any of the valuable matter it contained before, yet without greatly increasing its size.

The edition of 1900 is greatly improved over that of 1898 both by the introduction of many new illustrations and a revision of the text. In his preface Dr. Murray apologizes that "some increase in the size of the book has been found unavoidable," yet upon comparing the two editions we find that of 1898 contains 571 pages, and that of 1900 565, the size of the new pages being but little larger than the old ones.

The book opens with a new chapter upon Malformations. The matter all through has been revised and much of it rewritten. It seems to be thoroughly up to date. Excellent new figures have been introduced, among which should be mentioned a skiagraph showing a hand with chondromata and reproductions of photographs of the topography of the brain and some of its lesions.

The title-page announces that the book has four colored plates, but

we find that while there are four plates, only three of them are colored. These are very good and represent the malarial parasites and the important blood diseases. The uncolored plate shows normal and degenerated nerve cells stained by Nissl's method.

The pathology of nutrition is omitted, probably because of the space it would necessitate. It is, however, a disappointment to find diabetes, uræmia, scurvy, cachexia, acromegaly, myxœdema, Addison's disease, etc., either not mentioned at all or given a few lines under other headings. This is particularly true, because the author has thought it necessary to devote so much space to general considerations regarding the bacteria, their biology, cultivation, and observation. While the matter upon bacteriology is certainly good and undoubtedly very important, it is very likely that a student of medicine will refer to some text-book upon bacteria for his knowledge of them rather than receive it from this brief writing. On the other hand, as there are few other sources of information concerning the pathology of nutrition and metabolism, he might be glad to derive it from his text-book of pathology.

J. McF.

DISEASES OF THE NERVOUS SYSTEM. By H. OPPENHEIM, M.D. Authorized translation by EDWARD E. MAYER, A.M., M.D. First American from the second revised and enlarged German edition. Philadelphia and London: J. B. Lippincott Company, 1900.

IT is hardly necessary to review this book except as a translation, as the first German edition has been before the public since 1894. Every neurologist who is familiar with the German language has long ere this learned to appreciate Oppenheim's text-book; but, unfortunately, it was a sealed volume to many whose knowledge did not extend beyond the English language, and Dr. Mayer, therefore, has rendered a valuable service to the great English-reading medical public. The amount of information that Oppenheim has crowded into 874 pages (American edition) is remarkable, and it is this condensation that makes the volume so valuable to the student and the busy practitioner, who want the important facts of neurology in as small a compass as is consistent with accuracy. The illustrations are satisfactory, although some could be improved upon, notably the one on page 94. Illustrations may be of value in the teaching of nervous diseases, especially when accompanied by legends containing a short description of the case represented. The translator has not been enslaved to a notable degree by German methods and forms of expression, but has made a liberal translation, and yet one that appears to be accurate. This is more difficult to do from the German than from the French. Occasionally expressions are detected that are somewhat objectionable, as, for example, "gravity abscess." This is a literal translation of *senkungsabscess*, but the English expression is less pleasing to the ear than the German. The translator must have been frequently puzzled in selecting the best English equivalent for the German. This American edition will doubtless be of much service.

W. G. S.

PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D.,

PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND,

AND

GEORGE DOCK, M.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MICHIGAN.

Mechanical Treatment of Anasarca.—K. DEHIO (*St. Petersburg med. Wochenschrift,* December 23, 1900) discusses the methods that have been suggested for the mechanical treatment of anasarca and describes the apparatus which he has devised for this purpose. It consists of a rubber band widened at one area, at which point there is an opening about 8 cm. in diameter. In this opening is placed a rubber funnel, which is fastened to the band. The outlet of the funnel is connected with the tube, and after careful disinfection of the skin a number of incisions are made close to each other, the funnel is closed by means of the band, and the incised area is kept absolutely protected from air and from infection. He reports fifteen cases which he has treated with this apparatus, with apparently extremely successful results. He states that as much as ten or twelve litres may escape in this way in one day. It is important not to put the funnel on very tightly, as this interferes with the flow; it is merely essential that it shall be so applied that air cannot enter beneath it. It is always important that the patient should lie with the incised area on a low level. Dehio believes that proper mechanical treatment of anasarca will have very successful results if it is undertaken sufficiently early. One valuable point about the apparatus is that it allows of a ready collection of the fluid. He describes the fluid which he obtained in a series of cases of nephritis, and compares it with that obtained in cardiac failure with general venous stasis. The most striking fact was that while the albumin in the cardiac cases (estimated by the Essbach method) was always above two parts in a thousand and reached as high as five parts in a thousand, in the nephritic cases it never went above 1.5 parts in a thousand and in most cases was present in traces only, but estimation of the nitrogen showed that this was about equal in the two classes of cases; it was a little higher, as a rule, in the cardiac cases, but there was not a great difference. The conclusion which Dehio

reaches after examination of these figures is that in nephritis the fluid of the anasarca contains, beside albumin, some nitrogenous substances which are absent in the mechanical œdema of cardiac disease. These are probably products of protein metabolism which are not properly excreted through the urine. He also discussed the character of the fluids seen in ascites, in hydrothorax, and in anasarca. The observations of other workers have shown that in general the transudates in cases of nephritis are of lower specific gravity than in cases of cardiac failure. In nephritis, for instance, the specific gravity of the ascitic fluid averages about 1006, that of hydrothorax 1007, and that of anasarca (Dehio) 1007. With general cardiac failure the ascitic fluid is about 1012, the fluid of hydrothorax is about the same, while that of anasarca (Dehio) is almost the same as the anasarca of chronic nephritis—*i. e.*, 1008. The fluids of hydrothorax and ascites have been found to contain much less albumin in cases of nephritis than in general circulatory failure—conditions similar to those found by Dehio in anasarca. For instance, the ascites of nephritis was found to contain 0.2 per cent. and that of general circulatory stasis 1.7 per cent. It is notable that the fluid of the subcutaneous tissues seems, according to Dehio's investigations, to be much poorer in albumin than that of transudates into the peritoneal and pleural cavities, as his average for anasarca was in cardiac cases 0.36 per cent. albumin, while in ascites and hydrothorax there have been found 1.6 per cent. and 1.3 per cent. The results which Dehio obtained seemed to confirm the statement previously made by Hoffmann, that if the fluid of anasarca contains less than 0.1 per cent. of albumin, severe disease of the kidneys may be diagnosed. Dehio noticed all grades of variation between the very low percentage in pure nephritic cases and the high percentage in cardiac cases—a very natural observation, as the renal condition and the cardiac condition have varying degrees of importance in such cases, and it is only rarely that anasarca is purely nephritic or purely cardiac. He compares the results of the study of the œdema fluid and normal blood plasma, and directs attention to the fact that while salts were present in both cases in about the same amount the albumin and the dry residue in general were far greater in blood plasma than in the fluid of œdema. This indicates, to his mind, that in œdema the capillary walls permit the salts to pass very easily, while they maintain considerable resistance against the passage of albumin and other organic substances.

Bacteriology of Rheumatism —F. MEYER (*Deutsche med. Wochenschrift*, February 7, 1901) states that in investigating cases of acute articular rheumatism bacteriologically, after unsatisfactory results from the direct examination of the joint exudate, he made cultures from the tonsils and discovered practically regularly the presence of a diplococcus which grew in chains and which in its bacteriological characteristics had a close resemblance to the organism previously described by Wassermann, but was not identical with it. This organism was not found on the tonsils of persons who had not acute rheumatism. When injected into animals it produced a seropurulent exudation in the joints, which was usually sterile. In about one-fifth of the animals so injected there was a verrucose or ulcerative endocarditis. He does not think that one can yet state positively whether the strep-

tococcus is actually the cause of rheumatism, or if it is the cause of rheumatism whether it is the only cause. The number of cases as yet investigated is too small.

MENZER (*Deutsche med. Wochenschrift*, February 14, 1901), in discussing Meyer's results, directs attention to the fact that streptococci have been found repeatedly on the tonsils and in the joint exudate in cases of rheumatism, and that Meyer's results, while important, are not wholly new, though the fact that the streptococci found by him and by Wassermann produced changes in the joints and endocardium is important. He describes his own results in four cases. In two of these the exudate from the joints showed the presence of streptococci, of diplococcus form, and in three cases, one of which was one of those previously mentioned, he obtained diplococci in streptococcic form from the substance of the tonsils. Portions of the tonsils was excised and bacteriological preparations were made from the cut surface. He thinks that it is still a question whether one will constantly be able in cases of acute rheumatism to obtain bacteria which produce joint changes in animals. It is also doubtful whether only the streptococci that have been found will show these characteristics. It is further necessary to consider the possibility that such changes may be produced by the microorganisms which are found on the tonsils in normal persons. He considers it possible that some one form of organism among those already described will be found to be the specific cause of acute rheumatism, though this is certainly doubtful, considering the close relation which rheumatism bears to atypical rheumatoid affections and to pyæmia. Still, from a clinical standpoint, rheumatism, to his mind, presents the appearance of a morbus sui generis.

Bacteriological Examination in a Case Resembling Typhoid Fever — SCHOTTMÜLLER (*Deutsche med. Wochenschrift*, 1900, No. 32) has examined the blood in fifty cases of typhoid fever, and found the specific bacilli in forty. Among the cases was one clinically resembling typhoid, in a patient who, convalescent from erysipeloid of the finger, was observed from the beginning. After three days of subnormal temperature the disease began with malaise, headache, and coryza; slight redness of the conjunctiva, the nasal mucous membranes, and pharynx. The temperature was 104°, pulse 80, full and regular. On the fourth day the spleen could be felt. On the sixth day the conjunctiva was normal, the tongue dry and red; there was bronchitis. On the ninth day roseolæ appeared, and became more numerous in the following days. Continued fever, at about 104°, lasted ten days. Lysis then began; convalescence was interrupted by slight elevations of temperature. There were no characteristic stools. The blood on the sixth day gave colonies of bacilli, resembling those of typhoid fever in many respects, especially morphologically and tinctorially, but differing in others. It did not coagulate milk; it produced acid; it did not form indol, but it caused fermentation. The serum reaction of the patient was negative with fresh typhoid cultures in dilutions of 1 : 20 to 1 : 100. The patient's own serum caused agglutination of his own cultures at 1 : 50 and 1 : 20, but not at 1 : 100, but after the fever even a dilution of 1 : 100 was effective on the new bacilli, not on typhoid cultures. Serum from other cases of typhoid fever

caused no agglutination, except in one case, at 1 : 20. The case brings additional proof that we can have a disease clinically resembling typhoid fever without the specific bacilli. In the present instance we are without evidence as to the anatomical changes. The condition is obviously rare, but aside from its general interest it may have some bearing on the exceptional cases of typhoid that do not give the Widal reaction.

Septic Endocarditis.—E. MÜNZER (*Zeitschrift für Heilkunde*, Band xxi., p. 251) particularly directs the attention of the general practitioner to the not infrequent occurrence of prolonged febrile conditions of obscure origin, and dwells on the importance of the group of cases, belonging under this heading, which Litten terms chronic recurring septic endocarditis. Münzer reports a series of cases. In three of these there was a very definite relation to rheumatism or association with this disease, at any rate; in two cases the symptoms of endocarditis occurred after articular rheumatism, in the third after muscular rheumatism. The general relation between rheumatism and endocarditis is well known, and it is now recognized that rheumatism is of bacterial origin; also, it is known that the micro-organisms found in rheumatism are generally those that are found in septic endocarditis, hence a possible connection between the two diseases is readily seen. It is very difficult to draw the line between mere benign rheumatic endocarditis and a septic endocarditis associated with rheumatism, particularly when the person with rheumatic endocarditis shows a febrile recurrence, with signs of renewed involvement of the endocardium. There are undoubtedly cases which may be considered connecting links between pure septic endocarditis and what we commonly accept as rheumatic endocarditis. Münzer lays emphasis upon the fact that in the beginning of these cases cardiac symptoms are absent, and the diagnosis must be established upon a rise of temperature in the evening, which is later followed by an erratic course of fever, with chills, swelling of the spleen, sometimes definite symptoms of infarct, more or less pain in the joints, and hemorrhages into the skin and into the choroid. The most important diagnostic difficulty is always in distinguishing the cases from typhoid fever and malaria. The prognosis is bad, but always absolutely so.

Metabolism in Obesity.—A. JAQUET and N. SVENSON (*Zeitschrift für klin. Med.*, Band xli., Hefte 5 and 6) contribute a study of the metabolism in three cases of obesity. There has been much discussion as to whether there really exists any condition in which there is suboxidation of fats and obesity resulting from this. The existence of such a condition, though suspected, has not been proved. If the results reported in this paper are confirmed it apparently does exist. The authors found in consonance with other observers that the respiratory interchange in three obese subjects was normal during a period of temporary abstinence from food, but they lay stress upon the fact that when observed after taking food the respiratory interchange showed a much briefer and less pronounced increase than is customary in normal persons. This, they believe, is sufficent to explain the fat deposit. The reaction of the respiratory interchange to muscular exercise seemed to vary according to the condition of the other organs. In one case

it was normal or about normal; in two others a relatively slight increase in muscular exercise caused a marked increase in the consumption of oxygen. The use of thyroid was tried in these cases and a marked decrease in weight was produced. In the one series of studies the authors believe that they demonstrated an actual diuretic effect of thyroid extract, and they believe that in this case the loss of water was sufficient to explain the loss in weight. In other instances, however, there was an increase of metabolism and the oxidation processes seemed to be definitely increased after taking food, though there was not the same increase during abstinence.

Determination of the Species of Blood.—UHLENHUTH (*Deutsche med. Wochenschrift*, February 7, 1901) contributes some very interesting results which he has obtained in the effort to provide a method for the differentiation of various forms of blood. He injected rabbits with 10 c.c. of defibrinated cow's blood, making five such injections at intervals of about a week. He then made a perfectly clear solution of cow's blood in about one hundred parts of water, filtering off any deposits which formed. He introduced about 2 c.c. of this solution into small test-tubes and added an equal amount of 1.6 per cent. salt solution. A cloudiness resulted when the blood-serum of the rabbit was added to the solution. He considers it extremely important to use physiological salt solution in diluting and not mere water, as normal rabbit serum will become cloudy if introduced into a watery solution. He states that the results seem to be entirely specific, as solutions of a large series of blood from other animals caused no reaction. When, however, the blood of other animals or of human beings was originally injected into the rabbits whose serum was used in the test, the same reaction occurred with the special form of blood used, but with no other. He believes that in this way one may definitely tell human blood from other blood. The reaction was obtained from blood of various species that had been dried for weeks, dissolving it first in physiological salt solution.

Bacteriological Diagnosis of Typhoid Fever.—E. SCHOLZ and P. KRAUSE (*Zeitschrift für klin. Med.*, Band xli., Hefte 5 and 6) contribute a study of some of the bacteriological methods now in use in the diagnosis of typhoid fever. Scholz discusses the Widal reaction and reaches the conclusion that it is of little value in early diagnosis. He ranges it among other symptoms of typhoid fever, all of which may at times be absent or appear only late in the disease. He believes that the greatest weight should be laid upon exact clinical observation of the whole course of the disease in distinguishing typhoid fever from similar conditions. The latter part of his observation is undoubtedly proper, but his observations concerning the Widal reaction were confined to the investigation of only 55 cases, 47 of which were positive and 8 negative. Among the positive cases there were 3 in which the reaction appeared only after five weeks. The series of 8 negative cases contained 2 in which the last test of the reaction was made on the ninth day; in 2 others the reaction was undertaken on the eighteenth and twenty-fifth days, but in the remaining 4 the test proved negative when undertaken between the sixty-second and the one hundred and sixth days of the disease. These observations, while of interest, are too few in number

to be compared with the large numbers of cases already reported, which show that the reaction is much more important than most other symptoms of the disease. Krause has studied the value of investigation of typhoid spots for bacilli. In 14 of 16 cases he obtained characteristic bacilli, and he considers this a more important method of examination than the Widal test, as five cases which showed bacilli in the spots showed no agglutination. He directs attention, however, to the fact that the bacilli may disappear from the spots within three to five days after the appearance of the spots, and that several spots should always be examined, as bacilli may be absent from some of them. He recommends making several moderately deep incisions into the spots and scratching the surface thoroughly when inoculating media from the spots. He admits that this method is of limited value as a diagnostic measure, because spots are absent in a considerable number of cases, other eruptions are readily confused with the typhoid eruption, the spots oftentimes do not appear early enough to be of great aid in diagnosis, and bacilli cannot always be obtained from them. [This method of examination, because of the technical difficulties connected with it, cannot ever prove as useful as the Widal reaction in the great mass of cases, as it is impossible to carry it out without fairly extensive bacteriological apparatus and the services of a bacteriologist of some skill, while the Widal reaction requires little apparatus, comparatively little special experience, and is less disturbing to the patient.] Krause has also studied Piorkowski's method of inoculating a urine-gelatin medium with the stools of suspected cases. He investigated 19 cases, making in all 123 tests. He found that in three-fourths of these instances the test was positive, while in four typhoid bacilli were not obtained. He thinks that this culture medium is a valuable addition to bacteriological methods, but that for diagnostic purposes the appearances of plate cultures alone are insufficient, and the bacilli must always be recognized by the usual chemical and biological measures. He found that this method could be more easily carried out, without waiting for urine to become alkaline spontaneously, if the urine were inoculated with the micrococcus ureæ and kept in a thermostat for from twenty-four to forty-eight hours. The dilute gelatin used in this medium becomes fluid very easily, however, and the medium cannot be satisfactorily used in summer time.

Gastric Carcinoma.—E. JÜRGENSEN (*Deutsch. Archiv für klin. Med.*, Band lviii., Hefte 5 and 6) describes a case of carcinoma of the stomach in which it was notable that the HCl secretion was present until shortly before death and that there was marked variation in the daily amount of urine. At times practically no urine was secreted, and at such times there was marked tendency to somnolence, the reflexes were decreased, and the pupils were much contracted. The administration of large quantities of water per rectum and subcutaneously caused the disappearance of these symptoms coincidently with increase in the excretion of urine. The most rational explanation of the symptoms seemed to be poverty of fluids in the tissues. In another case of carcinoma there was marked fever of an irregularly remitting character. With the attacks of fever evidences of breakdown of the tumor were shown in vomiting of blood and increased pain and tenderness. The fever was attributed to the absorption of the products of

tumor destruction. In the periods in which the patient was free from fever the urine showed marked diazo-reaction and there was decided rapidity of the pulse. These symptoms were also attributed to absorption of toxic materials formed in the tumor destruction. RÜTINMEYER (*Korrespondenz-blatt für Schweizer Aerzte*, 1900, Nos. 21 and 22) discusses the clinical conditions in gastric carcinoma. Of 86 cases he found that 14, or 16 per cent., showed free HCl upon the first examination. This is somewhat higher than the percentage ordinarily given. Of these 14 cases 6 were certainly developed upon the basis of an old ulcer. In the other cases this question was in doubt. The free HCl was often found still present when the tumor had become large and even just before death. Distinct lactic acid reaction was obtained in 87 per cent. and Oppler-Boas bacilli were found in 80 per cent. In three cases the carcinoma was observed very early in life, during the fourteenth, nineteenth, and twenty-third years respectively. ROSTOSKI, in an abstract of this article (*Centralblatt für innere Med.*, January 12, 1901, p. 52), stated that he had recently seen a case of carcinoma in a patient aged sixteen years. The case came to autopsy and the diagnosis was confirmed.

Mitral Stenosis without Murmur.—STRAUSS (*Centralblatt für innere Med.*, January 12, 1900) demonstrated to the Berlin Medical Society a case of mitral stenosis in which there had been no murmurs during life, but the diagnosis had been established. The patient was a glassblower, aged twenty-one years, who had had dyspnœa for years, with occasional hæmoptysis; he had no rheumatic history. His pulse was small and irregular, there was marked enlargement of the cardiac dulness, pulsation was visible in the third left intercostal space, and there was marked epigastric pulsation, but the cardiac sounds were pure. The reasons for making the diagnosis were irregularity of the pulse, with accentuation of the second pulmonary sound, marked epigastric pulsation, and circumscribed tenderness about the cardiac apex. The post-mortem showed an extremely high grade of mitral stenosis, with narrowing of the aortic orifice and some aneurismal widening of the pulmonary conus arteriosus.

A. FRAENKEL, in discussion, stated that he believed that the reason that aortic stenotic murmurs are likely to disappear shortly before death is that the energy of the heart action grows weaker. He spoke of a case of aortic stenosis in which there was a loud murmur two years ago. The patient recently died, the murmur being heard shortly before his death only as a soft, blowing sound at the apex. Autopsy showed a high grade of aortic stenosis.

Volvulus of the Stomach.—WIESINGER (*Deutsche med. Wochenschrift*, February 7, 1901) describes a highly interesting case of volvulus of the stomach, with complete occlusion of the cardia and pylorus and associated with acute fat necrosis, in which entire cure followed operation. The patient was a man, aged forty-one years, who, after a dietetic indiscretion, was taken suddenly ill in the midst of entire health. He had vomiting, constipation, pain, and distention of the abdomen. The vomiting in a short time became unproductive of anything but mucus. Any attempt to swallow was followed by immediate regurgitation. The patient was brought

to the hospital on the fourth day of his sickness; at that time there was a large mass in the upper portion of the abdomen. Operation was undertaken and the anterior wall of the stomach was found lying over the mass. The latter, from its cystic feeling, was thought to be possibly a pancreatic cyst. It was punctured and a very large quantity of fluid was drawn off (about 4 litres). It then became evident that the whole mass was the stomach distended with fluid and that the pancreas was entirely healthy excepting, perhaps, for some enlargement. The stomach was found twisted about 180° on its axis and fixed in this position through adhesions, the pylorus and cardia being completely occluded. There was beginning peritonitis. The stomach was replaced in proper situation and retained its position without any artificial aid. The man became entirely well and remained so. The case is especially notable for the entire cure of fat necrosis by operation. The fat necrosis was probably due to pressure of the distended stomach upon the pancreas itself or upon its main duct. The cause of the volvulus seemed to be displacement of the colon above the stomach, so that the partial fixation which this organ normally gives the stomach was absent. When a partial volvulus had come to pass this was undoubtedly largely increased by the distention of the stomach with the fluid secreted into it in such large amounts.

Hæmatemesis in Intestinal Stenosis.—L. ATIXIER and C. VIANNAY (*Gazette hebdom. de Méd. et de Chir.*, 1900, No. 77) direct attention to the rarity with which hæmatemesis has been mentioned as a symptom of stenosis of the intestine; it is not commonly discussed among the causes of gastric hemorrhage. It is, nevertheless, not surprising that it does occasionally occur. In the case reported by the authors the patient was admitted with the signs of severe intestinal stenosis, which laparotomy showed to be due to adhesions in the ileocæcal region. These were overcome as far as possible and the patient improved temporarily, but after a few hours began to vomit again; the vomitus was black, had no fecal odor, and gave the characteristic reactions of blood. The patient died the next day after having vomited certainly as much as 2 litres of this black material within twenty-four hours. The stenosis was found to be about 50 cm. from the ileocæcal valve, the intestine being fixed by adhesions and almost completely stenosed. Masses resembling the vomitus were found in the upper portion of the small intestine, while normal feces were found in the lower part. In the upper portion of the small intestine there was severe congestion and there was a hemorrhagic suffusion at the point of stricture. The occurrence of the hemorrhage was explained chiefly by the blood stasis produced by the stricture, which had caused an intense congestion of the intestinal mucous membrane; the authors also consider that the irritation of the peritoneum had caused severe vasomotor disturbance, and that the toxic and inflammatory changes present had caused alteration of the vessel walls and of the blood. There was no sign of ulceration in this case, and the authors direct attention to the fact that hemorrhage has been seen in a number of similar cases in which no change was found in the intestine which directly localized the source of the hemorrhage. Hemorrhage in such cases makes the prognosis extremely bad. It indicates severe lesions as a result of the occlusion.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

JOHN RHEA BARTON PROFESSOR OF SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY HOSPITAL,

AND

F. D. PATTERSON, M.D.,

SURGEON TO THE DISPENSARY OF ST. AGNES' HOSPITAL, ASSISTANT SURGEON TO THE DISPENSARY, UNIVERSITY HOSPITAL.

Treatment of Pott's Disease after the Development of the Deformity.—BRADFORD and COTTON (*Boston Medical and Surgical Journal*, September 20, 1900) state that the treatment of Pott's disease may be divided into two classes: (1) The treatment of the disease itself for the arrest and cure of a pathological process, and (2) the treatment of the deformity—that is, its correction or the prevention of its increase. The treatment of the disease itself consists in the proper fixation of the spinal column, either in a recumbent position in the acutest stage, or with thorough fixation and ambulatory treatment in the subacute and convalescent stage—that is, as soon as the slight jar unavoidable in locomotion may be permitted without fear of ill effect. The correction of the deformity: forcible correction has been attempted in 639 cases, with deaths from the operation in 5 cases, and death from some other cause in 20 cases. The immediate results were respiratory embarrassment in 7 cases, pain in 6 cases, and severe shock in 3 cases. Abscess was present before the operation in 19 cases; ruptured in 4 cases. benefited or absorbed in 6 cases, and appeared after operation in 2 cases, Paralysis was present before operation in 23 cases, relieved in 17 cases, not relieved in 2 cases, and made worse in 1 case. Paralysis appeared after the correction in 4 cases. The direct effect on the deformity in 240 cases was complete correction in 130 cases, incomplete in 94 cases. The result in 77 cases was no relapse in 20 cases, some relapse in 50 cases, and total relapse in 7 cases. The amount of force that may be used with safety varies with the amount of resistance and solidification of the affected bone. Correction treatment is admissible in the first of the stages only. The methods that have been employed in the correction by force are: (1) Vertical suspension from the head; (2) vertical suspension by the head and arms; (3) horizontal traction of the recumbent patient, with the pull upon the head, arms, and legs; (4) the same, with downward pressure upon the projection and support at the neck and hips, the patient lying upon the face; (5) traction with the patient lying upon the back; (6) downward pressure upon the pelvis and upper portion of the trunk, with upward resistance at the back at the point of maximum projection, the patient lying upon the back, with or without traction to the head and feet; (7) the patient lying upon the back, with upward pressure by means of a strap passed under the patient at the point of greatest projection, connected with a cord and pulley; (8) correction with

the patient seated, the upper portion of the trunk being stretched backward while the point of projection is passed forward at the knuckle and the pelvis secured by a strap. Experiments on the cadaver have shown that the correcting force to be preferred is that of pressure rather than traction, as the former is more precise in its effect upon the diseased tissue than a pulling force which is partly expended upon the secondary curves. A pulling force involves an unnecessary strain upon the neck and on the lumbar region which, when an anæsthetic is not employed, causes pain not essential to correction. A pressure force may be made to act more directly and with less waste. The method to be regarded as the best is that one in which the force applied can be more easily controlled by the surgeon and which can be employed with the least discomfort to the patient. That also is to be preferred in which the retaining jacket can be applied to a spine held in a corrected position with the least discomfort to the patient and the greatest facility to the surgeon. After correction of the deformity it is necessary to retain the spine in a corrected position until the gap made in correction is regained or supported by ankylosis. A retention appliance is quite as important as the correction itself, and it is necessary that careful fixation in a corrected position should be carried out for a long period. When correction is not possible for various reasons, either on account of the situation of the curve or on account of the pathological condition, the treatment by fixation of the trunk with appliances is to be employed, with the hope of arresting the development of the curve. The retention of the spinal column in the best possible position is, therefore, always important, even if correction has been attempted. When fixation treatment is neglected, even if satisfactory correction has been attained, a relapse of the curve will follow. After the tubercular process in the spinal column is arrested and complete bony ankylosis has occurred, it will sometimes be found that an increase in the curve may take place in the course of the growth of the child. This is not due to a continuation of the tubercular process, but to a change in the shape of the vertebræ, caused by the abnormal direction of superimposed pressure. The extent of these secondary curves and their development depend upon the rate of growth of the child and the amount of superimposed weight rather than upon a condition of osteitis. In order to overcome this it is necessary to continue the use of the mechanical appliances longer than the pathological condition would seem to demand. It has been shown that the main support in the diseased spinal column is in the articular processes. When these are welded together in connection with an ankylosis of the transverse and spinous processes, nature has furnished the most desirable support to a spinal column with diseased vertebral bodies. Attempts to promote solidification of these tissues naturally suggest themselves, but there can hardly as yet be said to be an established method of treatment. It may be said, in conclusion, that the correction or rectification of the curve in Pott's disease is to be considered in every case of active disease with a deformity. The employment of force should depend on the pathological conditions and not on the extent of the curve. Force should be used with great reserve. Improvement of the curve is to be considered in every case, and is to be attempted wherever the spinal column can be made straighter without great force. The main dependence, however, for an ultimate suc-

cess remains in the surgeon's careful, continued, and thorough employment of retention appliances which hold the spine in the straightest possible position for a sufficient length of time for consolidation of the diseased bony structures. Success is to be won more by careful attention to detail than by operative procedures.

Conservative Operations in Renal Retention.—KUSTER (*Thirteenth Int. Med. Cong. Résumé.* August, 1900) makes the following summary of his views:

1. There are two forms of renal retention.

a. Primary retention, the sacculated kidney, cystonephrosis.

b. Secondary retention, the empyema of the kidney arising from a pyelonephritis. It is unnecessary to speak of these, as they all require radical operation.

2. The name "sacciform kidney" comprehends all primary forms of retention due to the hindrance of the flow of urine without regard to their contents. This may be watery, urinous, purulent, viscid, or pasty. It is inconvenient to give to each of these a name, for they really comprise but one disease—cystonephrosis, of which certain varieties may have the names pyonephrosis, ureonephrosis, etc.

3. The cause of the obstruction is situated in the ureter in all but a few exceptional cases. The most frequent seat of obstruction is in the upper third, and for this reason operative intervention should usually seek this point.

4. Renal retention should be treated conservatively, *i. e.*, with the preservation of the kidney, even when the other kidney is known to be intact.

5. The conservative methods can be divided into four groups:

A. Fixation of a movable kidney (nephropexy, Guyon). It is often necessary to combine this simple operation with others, as detachment of the ureter or plastic operations.

B. Formation of anastomoses between: 1, ureter and ureter; 2, pelvis and ureter; 3, pelvis and bladder.

These operations are satisfactory only when no dead spaces are left which may determine the formation of urinary calculi. Without such precautions the results are worthless.

C. Plastic operations with or without resection of the ureter.

1. Pyeloptychie (J. Israel).

2. Division of the valve and suture (Fenger).

3. Simple resection of the stricture and ureter. This should always be oblique, as this method is less liable to be followed by stenosis than the transverse.

4 Uretero-pyeloneostomy by the method of Trendelenburg and Küster.

D. Partial resection of the kidney.

a. Resection of the renal pelvis followed by suture (Albarran).

b. Wedge-shaped resection of the kidney parenchyma in cases of horseshoe-shaped kidney.

FENGER (*Ibid*) summarizes his views on the subject as follows:

Remittent or beginning retention (and all retention is, in its early stages, as a rule, remittent) is a condition in which we should always consider the possibility of saving kidney tissue by re-establishment of the free passage of urine.

The obstruction may be located in the calyces, in a branch of the ureter, in the bottom of the pelvis, or origin of the ureter, or in the ureter.

Obstruction in the first two locations causes a local or partial cystonephrosis, and demands, for the relief of the condition, bisection of the kidney from its convex surface, and division of the partition walls.

Stenosis at the exit of the ureter (valve-formation, oblique implantation from unilateral dilatation) requires operations which vary in accordance with the absence or presence of stricture at the upper end of the ureter.

If there is no stricture at the upper end of the ureter, the valve-formation may be overcome by a trans-pelvic operation (Fenger, Mynter, Trendelenburg, Küster), or by the extra-pelvic operation, which he prefers.

If there is a stricture of the ureter at its exit from the pelvis, as may be expected in infected cases, we may resort to extra-pelvic plastic operation (Fenger), or to resection of the strictured end of the ureter, implantation of its upper divided end into the pelvis (Küster).

If the stenosis or obstruction is located in the ureter, it must be dealt with according to laws laid down for surgery of the ureter, namely, resection and re-implantation, or his plastic operation.

Are the results of these, so to speak, tentative conservative operations permanent, or does relapse eventually occur?

In five of his cases no relapse occurred.

1. Valve formation, transpelvic operation, no relapse six years later.

2. Stricture, upper end of ureter, extra-pelvic operation; no relapse six years later.

3. Valve-formation of lower branch ureter, extra-pelvic operation, bisection of kidney, division of partition walls; no relapse after three years.

4. Excision of valve in ureter by author's plastic operation; no relapse after three years.

5. Stone in upper end of ureter, removed by the author. One year later, plastic operation on the ureter by another surgeon. Six months later, complete occlusion of ureter at site of second operation; author's plastic operation; no relapse after one year.

In two cases relapse occurred:

1. Valve-formation without stricture, intra-pelvic operation, relapse of stenosis, occlusion of pelvic orifice; nephrectomy one year later.

2. Patient operated on by another surgeon, later on by the author; operation was incomplete, failed, and nephrectomy was finally necessary.

Bazy (*Ibid.*), in discussing the same subject, defines the condition of renal retention as the constant presence of urine in the pelvis or calyces of the kidney, which is the result of an interference with its flow. The obstruction may be found anywhere between the origin of the ureter in the pelvis of the kidney and its vesical insertion, or it may be due entirely to a vesical cause.

The obstructions of the ureter, which alone are considered, are found anywhere in its course, and consist of strictures, twists or vicious insertions, and calculi.

1. Twists are generally, if not exclusively, found in the upper third of the ureter. They are associated with movable kidney and vicious insertions of the ureter in the renal pelvis.

2. Calculi may be found anywhere in the ureter, but the point of election is at one or other extremity.

3. Strictures may be found at all points of the ureter, but they are more frequently above or below.

These strictures may be due to lesions of the ureteral wall or to inflammations of neighboring organs and cicatricial tissue forming there and by its contraction, producing the stenosis.

Such strictures are always present in cases of uretero-vaginal fistula—an important point.

Renal retention may be intermittent, remittent, or continuous. The first two are due to vicious insertion and movable kidney or a calculus. Continuous retention, or even permanent, is caused sometimes by calculi, but more commonly by strictures, the action of which is progressive and permanent. The final stage is a hydronephrosis or pyonephrosis.

Finally, the retentions may be aseptic or septic. The aseptic are hydronephroses. The septic are the infected hydronephroses or pyonephroses.

Conservative operations are indicated only when the kidney has functional utility and is not a source of danger. The indications are most exact in pure hydronephroses, they are less clear in cases of infected hydronephrosis, they are absolute in cases of unilateral kidney, no matter what the condition.

The treatment varies with the condition. Calculi should be removed by nephrotomy, ureterotomy, or by vesico-ureteral or vagino-ureteral operation. Twists heal spontaneously or by nephrorrhaphy. Abnormal implantations are operable by uretero-pyeloneostomy. These operations are primary and secondary, depending on the presence or absence of infection. There are various methods that differ slightly from one another. Resection of the renal pelvis should be confined to pure hydronephroses without infection. Aseptic operations may be done by either route. Septic operations (pyonephroses) should always be done by the lumbar route.

In all cases it is absolutely essential to overcome all strictures.

Infection of the ureter and renal pelvis is not a contraindication to operation. Abscess of the kidney is, however, a contraindication to all anaplastic intervention.

The results of the past seven years justify these conclusions.

Experimental Injection of Testicular Fluid to Prevent the Atrophy of the Prostate Gland in Dogs after Removal of the Testes.—WALKER (*Bulletin of Johns Hopkins Hospital*, December, 1900) states that it is now a well-known fact that the prostate gland undergoes an atrophy after the removal of the testes, and these changes have been most accurately studied by several investigators, whose observations the author has confirmed in several instances. These may be summarized thus: Twelve days after the removal of the testes there can be seen a beginning change in the epithelial cells of the prostate gland; the protoplasm first begins to clear up and the nuclei lose their chromatin structure and diminish in size. Following this the protoplasm becomes gradually less and less, and finally at the end of about six weeks it presents only a faint rim around a small, deeply stained nucleus. The bloodvessels, which at first were large and turgid, very soon begin to shrink, and finally many of them are obliterated; the muscle

undergoes fatty degeneration and is ultimately converted into or replaced by fibrous tissue. After a period of from eight months to one year the gland is reduced to about one-fourth its normal size; the glandular structure is represented by only a few small tubules lined by shrunken and quiescent cells, and the remainder of the gland is converted into fibrous tissue. The result may be summed up in a few words: The prostate gland in the infected animals presented both macroscopically and microscopically the same changes that had occurred in the uninjected ones. It may be said, therefore, that the injections of the testicular fluid had apparently no effect whatever, and one is probably justified in concluding that the atrophy of the gland is in no way connected with the absence of any substance in the testicular secretion.

Cholelithiasis from the Surgical Point of View.—SMITH (*Buffalo Medical Journal*, January, 1901) states that it is known that the colon bacillus is pus-forming, and under favorable circumstances, especially when mechanical interference with the biliary flow arises, it may lead to suppurative cholecystitis and empyema of the gall-bladder. Other infectious organisms, according to recent investigations, are found to lead to pus formation in the biliary tracts. When local conditions or the character of the bacteria lead to an infection of the catarrhal inflammatory type in the bile tracts, suppuration does not take place, but the deposit of cholesterin and bile salts about a focus of bacterial activity leads to gallstone formation. The colon bacillus and the typhoid bacillus have lately been found by numerous observers as the basis of biliary calculi. When we consider cholelithiasis from this pathological point of view the treatment is put upon a broad surgical plane that leaves to internal medicine the close study of the subject from the diagnostic stand-point with a view to the course to be followed in treatment. Treatment should be pursued along medical lines after diagnosticating cholelithiasis to the point of determining that its manifestations are threatening to the patient from the element of sepsis, or of mechanical interference with the biliary flow, or the conjunction of these two elements. Internal medicine should then call upon surgery to drain for sepsis and to afford mechanical relief to mechanical interference with the biliary current. In conclusion, it seems that the indications for operative treatment of cholelithiasis can be summed up under two headings: In the first place, operate for biliary calculus obstruction along the bile tracts, which has in its train of sequelæ recurring colic, hydrocholecyst, persistent jaundice, and cholæmia; in the second place, operate for sepsis of the bile tracts when it develops such dangerous conditions as suppurative cholangitis, suppurative cholecystitis, or perforation of the duct or cholecyst. In both classes of cases suffering and death are to be dreaded, in the majority of cases more from the disease and its sequelæ than from the surgeon's knife.

A Contribution to the Diagnosis of Suppurative Appendicitis.—ROBINS (*Medical Record*, October 27, 1900) states that a white blood-count will often swing the pendulum in the direction of the diagnosis of one disease or another. Especially is this true in cases of suppuration complicating an infectious or inflammatory disease. Thus a sudden hyperleucocytosis in the

course of typhoid fever will point to a complication, and if accompanied by a sudden onset of pain in the abdomen will be a sufficient justification for an exploratory incision. A hyperleucocytosis will at once differentiate a suppurative appendicitis from simple colic, typhoid fever, ovarian neuralgia, impaction of feces, and floating kidney. Developed during the course of a catarrhal appendicitis it will point to suppuration with as much precision as any of the diagnostic signs in our possession. The following cases of appendicitis show the relation of suppuration and hyperleucocytosis:

No. 1. 52,000 leucocytes; pus formed on operation.
No. 2. 19,000 leucocytes; pocket of pus found.
No. 15. 22,300 leucocytes; abdomen full of pus.
No. 17. 21,900 leucocytes; pus; cæcal abscess.
No. 18. 47,700 leucocytes; second operation; pus.
No. 18. 30,300 leucocytes; third operation; pus.
No. 23. 20,000 leucocytes; operation; pus.
No. 28. 19,000 leucocytes; purulent peritonitis.
No. 31. 17,500 leucocytes; pint of pus.
No. 34. 16,200 leucocytes; abscess cavity.
No. 40. 32,800 leucocytes; large amount of pus.
No. 50. 17,000 leucocytes; pus.
No. 54. July 6th, 11,800 leucocytes; slight tenderness, no resistance or dulness.
No. 54. July 7th, 19,000 leucocytes; resistance and tenderness; operation, pus.

The last case shows how by means of a blood-count pus can be detected in twenty-four hours and a fatal case be thus converted into a very favorable one, and it appears rational, therefore, that a frequent blood-count in cases of appendicitis is almost an imperative necessity.

The Importance of Early Operation in Gallstones.—RICHARDSON (*Journal of the American Medical Association*, December 1, 1900) states that gallstones should be removed from the gall-bladder as soon as their presence is reasonably sure unless the diseased condition of the other viscera makes the hazard of the operation greater than the hazard of the gallstones themselves. The author has observed that the earlier the operation the less danger and the greater success. The removal of gallstones from a normal gall-bladder is without mortality, and he has yet to lose a case after the simple removal of gallstones from a normal gall-bladder. Operations on the cholæmic are attended by a relatively high mortality. In this class of cases the operation has often to be performed on the common duct, where the dissection is broadest and deepest and the patient's power of resistance feeblest. The significant and unfavorable factor, however, is the jaundice and not the dissection, for an even larger percentage of deaths has followed simple exploration for malignant disease blocking the biliary passages than has followed simple operation for gallstones in prolonged jaundice. All of the author's cholecystotomies have been successful. The fatal operations of this class have been cholecystotomies with removal of stones from the hepatic and cystic ducts through the gall-bladder. Considering the gravity of the acute infections of the gall-bladder, this class of cases has been

most brilliant, for nearly all the patients have recovered after simple drainage. The results of experience can but emphasize the importance of early operations. In most of the author's fatal cases the history of gallstones had lasted over many years—a period of time during which serious complications, both local and general, had taken place. Moreover, in many cases the patients were beyond middle life, and one patient at least was of advanced age. Among the deaths were four occurring during the course of an acute cholecystitis. In some of the successful cases, too, similar serious local and constitutional conditions existed, but in spite of them recovery followed. Patients of middle age, or younger, without these complications were all cured by operation, and thus far the cure has been permanent. Among the serious complications were acute infections of the gall-bladder in some twenty cases. All recovered except four. In many of them there was no history of gallstones; in several appendicitis was supposed to exist; in a few no gallstones were found; in two the operation was undertaken as a last desperate hope. The possibility of the occurrence of acute cholecystitis is another strong argument in favor of early operation. Though comparatively rarely seen in the acute stage, the author is sure that many of the contracted gall-bladders have passed through successive mild infections.

What are the indications, then, for operations on gallstones? In the author's opinion, the indication is the diagnosis of gallstones in the gall-bladder. When this diagnosis has been made the gall-bladder should be explored if there is no contraindication in other viscera. A single attack of gallstone colic after which a faceted stone is found in the stools indicates operation, but a single attack after which a single non-faceted stone is found does not. Repeated attacks of severe colic, even if stones are not found in the stools, strongly indicate exploration, especially if there is tenderness in the gall-bladder, with fever, for stones are probably confined in the gall-bladder or at its outlet, and the spasms are ineffectual efforts of the gall-bladder to expel them. All cases of acute cholecystitis demand operation if seen early unless the symptoms are rapidly improving, and then they require operation after the subsidence of the acute attack. Repeated attacks of gallstone colic indicate operation, even if no stones are discovered in the stools and even if the symptoms are so mild as not to demand it. True conservatism in the surgery of the gall-bladder—the lesions of which are purely mechanical—requires, as the only rational treatment, surgical measures which themselves are purely mechanical. Though natural relief in gallstones is not as impossible as in stones of the urinary bladder, the former, because of their occurrence, cause far more suffering and death than do the latter. Furthermore, the complications of gallstones are in many instances quite as disabling as those of urinary calculi, and they often are more rapidly fatal. A most pernicious argument against surgical measures in gallstone affections, as in appendicitis, is the occasional quiescence or apparently complete recovery after severe symptoms, but one can never predict the probable course. Removal of the appendix that has offended or is offending is the only common-sense method of treatment, as most experienced operators and clinicians will admit, the chief difference of opinion being as to the safest time for operation; so in patients who have suffered from gallstones—who are suffering

from them—it is but common-sense to advise simple and safe methods of sure removal rather than the uncertain and dangerous courses of natural evolution. In both diseases early operation, at a period when everything favors speedy convalescence, can but be regarded, in the light of experience and of common-sense, as a life-saving procedure gained at a minimum of risk.

PEDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,
OF PHILADELPHIA,

AND

THOMPSON S. WESTCOTT, M.D.,
OF PHILADELPHIA.

A Comparison of Drug Values in the Treatment of 752 Cases of Pertussis.—CHARLES G. KERLEY (*Proceedings New York Academy of Medicine, Section on Pediatrics*, February 8, 1900; *Pediatrics*, May 1, 1900) presented a paper under this title. The cases were separated as they developed into groups of twenty, and were allowed to cough without treatment until the height of the paroxysmal stage was reached, which usually required from ten to fourteen days. Five-sixths of the patients were under four years of age, and one-half under two years. The duration of the attack had varied between three and twenty weeks, the usual duration having been between six and eight weeks. Resorcin and boric acid with sodium bicarbonate were tried by insufflation in six institution cases, but were discontinued after three days. Alum, fluid extract of horse-chestnut leaves, dilute nitric acid, cocaine, bromoform, bromides, belladonna, and antipyrine had all been tried. The first three had been found valueless; alum appeared to be of some service, but had been badly borne by the stomach; bromoform had proved very unreliable. Cocaine in doses of one-tenth of a grain every four hours for a child of two years had been employed in about twenty-five cases. It had controlled the severity of the paroxysm somewhat, but not sufficiently to warrant its continuance.

Quinine in large doses (twelve to twenty grains daily) had produced great benefit, the number and severity of the paroxysms being remarkably controlled and diminished one-half or one-third. Belladonna had been used in sixty cases, pushed to its physiological effect, but no beneficial effects had been observed. Twelve to sixteen grains a day of a mixture of equal parts of the bromides of sodium, ammonium, and potassium, at the age of one year, gave better results than were obtained with the previously mentioned drugs.

Antipyrine had been used in sixty cases, and had controlled the paroxysms better than any other drug employed, and caused only a trifling depression if

administered with ordinary care. The combination of bromides with antipyrine had been used in sixty cases, with better results than from one or other of these drugs independently. For a child of eight months half a grain of antipyrine and two grains of sodium bromide should be given every two hours for six doses, and then its administration should be discontinued for twelve hours before being resumed. For a child between two and a half and four years of age, two grains of antipyrine and three or four grains of bromide should be given every two hours for twelve hours, and then discontinued for twelve hours before being resumed. The steam spray and fresh air were also useful adjuncts to the drug treatment.

Treatment of Pertussis by Oil of Gomenol.—LEROUX and PASTEAU (*Le Bulletin Médical*, June 13, 1900) speak favorably of the use of an oily solution of gomenol, which is an essence obtained by distillation from a variety of melaleuca viridiflora, grown in New Caledonia. From 5 to 10 c.c. of a 5 per cent. oil were injected into the gluteal muscles. The results of treatment in forty cases were generally favorable, the frequency and severity of the paroxysms being shortened and the duration of the disease reduced on an average to twelve to fifteen days. Treatment should be continued for four or five days after the last seizure.

The Acute Non-tuberculous Meningitis.—A very complete report upon this subject was recently made by CONCETTE, of Rome, to the Thirteenth International Medical Congress (*Revue mensuelle des Maladies de l'Enfance*, August and September, 1900, p. 394, and November, 1900, p. 550). It is based upon ninety cases of non-tuberculous meningitis and upon thirteen cases of poliomyelitis, most of which were exhaustively studied. Autopsies were obtained in twenty-two cases, and fifty other cases of various conditions, such as hydrocephalus, tuberculous meningitis, cerebral and rhachidian tumors, tetany, etc., were studied by way of comparison. At least 450 lumbar punctures were made. The conclusions of this very important study are worthy of attention:

1. A series of twenty-three cases of acute meningitis. These developed most often in the course of a gastro-intestinal infection or of a pneumonia or other acute infectious disease, more rarely in the midst of perfect health. They are characterized by an abundant exudation of cerebro-spinal fluid of limpid clearness and increased specific gravity, which is richer in albumin than normal and sometimes shows the formation of a fibrinous reticulum (the phlogistic exudate), but contains no trace of micro-organisms. The exciting cause is attributed to toxic elements. The term acute serous meningitis should be restricted to cases of this character.

2. In another series of twenty-one cases the meningitis most frequently developed primarily or, more rarely, in the course of another disease (pneumonia, intestinal infections, or typhoid) and was caused by various known organisms. The cerebro-spinal fluid may be perfectly limpid, clouded, or even purulent, and contains a much higher proportion of albumin than normal—1 to 2 per cent. At autopsy the meninges are scarcely affected, or may show varying degrees of fibrinopurulent exudate, which in the extremest cases may be very extensive and thick. Limpidity of the liquid

exudate in these cases does not justify the term acute serous meningitis, which should be reserved for the purely toxic cases of the first group. The most frequently encountered micro-organisms are the pneumococcus and the diplococcus intracellularis (meningococcus), but in rarer cases have been found the bacterium coli, the Eberth bacillus, streptococci, staphylococci, the bacillus pyocyaneus, the bacterium lactis aërogenes, or others. With the exception of the streptococcic or staphylococcic cases, in most of these meningites the cerebro-spinal fluid is limpid. The cerebro-spinal fluid does not furnish a good culture medium for micro-organisms, especially the meningococcus, which tends to die out and disappear. The pneumococcus determines the most serious and rapid cases, especially if it coincides with pneumonia (metapneumonic meningitis), but it may determine primary meningites of the same type. It is only exceptionally that benign forms are encountered.

3. Meningites produced by the meningococcus are almost always primitive (perhaps of nasal origin), have a much longer course, are almost always of intermittent type, and have a tendency to recovery in the majority of cases. The varieties of the meningococcus which have been described (Weichselbaum, Jäger-Heubner) are only modifications produced by varied conditions under which they develop.

4. Acute meningites, whatever their nature, which do not destroy rapidly (excepting the exceedingly benign forms), tend to a prolonged course lasting several months or even as long as a year, especially those due to the meningococcus, and may terminate in death in a profound state of atrophy, or in recovery which in most cases is incomplete, leaving as a result hydrocephalus, amaurosis, deafness, or various palsies.

5. All the causes above considered, whether bacterial or toxic, may act in the same manner upon the nervous tissue itself, or upon it at the same time as upon the meninges, and produce polioencephalites, poliomyelites, or meningomyelites, which should be considered as processes due to the same pathogenic cause, distinct only in special cases because of the quality of the causal element and of the localization.

6. Lumbar puncture constitutes an excellent means of diagnosis and sometimes of prognosis. It is also a powerful therapeutic agent if practised at an early period of the disease and continued with more or less frequency according to the gravity of the case. Under these conditions puncture seems to prevent extreme prolongation of the course and unfortunate sequelæ.

7. On the contrary, in other forms—*e. g.*, tuberculous meningitis—puncture is useless either for diagnosis or as a therapeutic measure. The same may be said for its use in chronic congenital hydrocephalus and cerebral tumors. Good results, however, can be obtained in tetany, hemorrhachis, and, according to some authors, in chorea.

Indications for Lavage of the Stomach in Nurslings.—HEUBNER (*Revue mensuelle des Maladies de l'Enfance*, November, 1900, p. 575) defines the indications for lavage of the stomach in the gastro-intestinal diseases of infancy. Under certain conditions this procedure produces little or no effect, as, for instance, with chronic gastro-intestinal lesions associated with

more or less pronounced athrepsia. Here lavage of the stomach gives no appreciable results, for it can combat only one of the many factors which enter into the case. The same may be said of cases of acute dyspepsia which begin not with gastric, but with intestinal symptoms, such as colic, meteorism, and green stools. Evacuation of the stomach cannot eliminate the harmful substances, and the same may be said of cases in which there is a grave inflammatory state of the large or small intestine.

Quite different is a condition of acute indigestion encountered in artificially fed children suddenly seized with repeated vomiting, anorexia, and signs of collapse, since in these cases there exists frequently a certain sluggishness of the stomach preventing the onward passage of the food. The intestine is protected, for some hours at least, from infection by the decomposing stomach contents, so that evacuation of the stomach by means of the tube, with subsequent lavage, brings about a rapid cure and prevents intestinal disturbance. These conditions in the infant constitute the chief indication for lavage of the stomach. Neither emetics nor purgatives are by any means so satisfactory; the former add to the general depression and the latter favor the progression of decomposing food into the intestine.

In the technique two precautions are necessary: the fluid used should always be a physiological solution of sodium chloride or a solution of sodium bicarbonate of the strength of 0.7 per cent., appropriately warmed. Pure water should never be employed, since it acts unfavorably on the epithelium of the stomach. The pressure should not exceed that of a column of water 20 cm. in height.

The Abortive Treatment of Pneumonia in Infants and Children.—H. ILLOWAY, of New York (*Pediatrics*, December 15, 1900, p. 442), asks the question, Can a pneumonic process in the infant or child be arrested at its outset—aborted? He then refers to the old-fashioned theory of jugulation, which held an important place in the practice of physicians of the past generation. From his own experience he answers the question affirmatively and proceeds to report a number of cases of both catarrhal and croupous pneumonia bearing out his statement. The first case was one of bronchopneumonia in an infant, aged nine months, which began after a bronchitis, with slight fever, lasting five or six days. The temperature then rose and for two days ranged from 102° to 102.75° and from 103° to 104°. On the morning of the third day, with a temperature of over 103°, considerable diminution of resonance in the right lower lobe posteriorly was detected. The child lay in a stupor, from which it was aroused only by cough. At this stage of the disease three-fourths of a drop of tincture of veratrum viride and one-fourth of a drop of tincture of aconite were given every hour and a half. By evening the temperature had fallen to 100° and the baby had begun to nurse well. Next morning the temperature was normal and rapid recovery followed; the cough continuing for ten days longer, growing less and less frequent and at the end of that time ceasing altogether. The second case occurred in a girl, aged eleven years, in whom the author had observed two previous attacks of bronchopneumonia, both of which lasted for more than three weeks. At the third attack the physical signs gave promise of more extensive involvement of the lung than occurred in either

of the two preceding attacks. The treatment here was the administration of three-fourths of a drop of Norwood's tincture of veratrum viride, with one-fourth of a drop of tincture of aconite, given at intervals of half an hour for five doses and then hourly. This dosage was continued from morning until evening, and by this time the child was so much better that the interval was made every two hours, and during the night the medication was omitted. On the following day the temperature was normal. All signs of bronchitis disappeared in seven days. Two other cases—one of bronchopneumonia, the other distinctly croupous—were treated successfully in the same way.

A second class of cases is described in which the infusion of digitalis (a decoction as prepared by German pharmacists, 10 grains to the ounce) seemed to act satisfactorily.

The author believes that the combination of aconite and veratrum viride acts directly upon the main factors in the morbid process—congestion and inflammation—as shown by the fact observed that the temperature was reduced permanently without subsequent rise even after the medicine was stopped. He considers the repetition of the remedies at short intervals to be of the utmost importance.

[It is a well-known fact that pneumonic processes in the child often terminate spontaneously after a course of only two or three days, so that conclusions based upon only a few cases, however treated, must be accepted with caution. Dr. Illoway's cases, however, are very suggestive and at least indicate that this combination of drugs can be used without harmful results. One of the editors of this department has frequently employed at the outset of pneumonia in children a combination of tincture of aconite and tincture of digitalis during the first twenty-four hours, with very encouraging results, which lend support to Dr. Illoway's contention.—T. S. W.]

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD WEBB WILCOX, M.D., LL.D.,

PROFESSOR OF MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL,

AND

SMITH ELY JELLIFFE, M.D., PH.D.,

PROFESSOR OF PHARMACOGNOSY AT THE COLLEGE OF PHARMACY; CLINICAL ASSISTANT AT THE VANDERBILT CLINIC (COLUMBIA UNIVERSITY), NEW YORK.

Urotropin as a Urinary Antiseptic.—DR. P. J. CAMMIDGE has given very careful study to the action of urotropin in the urine, especially in relation to its antiseptic action on the bacillus coli communis, the bacillus typhosus, and pyogenic cocci. He finds that in strong solution it is markedly toxic to the typhoid organism and less so to the colon bacillus and staphylococcus; in weak solution it inhibits growth only. The causes for

its antiseptic action were investigated, with not altogether definite results. It has been supposed that it breaks up into formaldehyde, but on this point the experiments are summarized as follows: (1) Urotropin alone by prolonged heating may be made to yield formaldehyde, but this decomposition does not take place at body temperature; (2) an alkaline solution of urotropin may be similarly decomposed, but the body temperature is not sufficient to cause the change; (3) dilute acids quickly decompose urotropin on boiling, with the evolution of free formaldehyde, and this change occurs to a slight degree at the body temperature; (4) acid salts—*e. g.*, of the urine—liberate formaldehyde from urotropin on boiling, but not at the normal body temperature; (5) the acid urine of a person taking 2 grammes (30 grains) of urotropin a day does *not* contain free formaldehyde. There is no doubt that there is an antiseptic in the urine, but it is evidently not free formaldehyde. It is possible that a new compound is formed with acid urine. Typhoid cystitis, suppurating pyelitis, and pyelitis from calculus, as well as simple colon infection of the bladder, are happily acted on, but gonorrhœal and tuberculous cystitis do not seem to be benefited. In using urotropin it is essential that the urine be rendered acid.—*Lancet*, 1901, vol. clx., p. 176.

Cobra Poisoning Treated with Antivenene.—Drs. W. Hanna and George Lamb, working in the Bombay research laboratory, report an instructive case. One of them was bitten, during experimentation, by a full-sized cobra and an appreciable amount of venom thrown into the operator's thumb. Local treatment was confined to sucking the thumb freely. Twenty minutes after the accident 4 drachms of Calmette's antivenomous serum were injected, half into each flank. This serum was four or five years old, and experiments made on rats a few weeks previous showed that it possessed one-fourth of its normal neutralizing power. Two and one-half hours after the patient was bitten symptoms of cobra poisoning set in; these were, at first, disinclination to work and lethargy, then followed nausea and vomiting, accompanied by slight paresis of the legs. Fresh serum was then obtained and two teaspoonfuls used. The nausea and the weakness of the limbs continued for some time, and at the expiration of about five hours all symptoms had passed away. The favorable result is attributed to the use of the serum even after general symptoms had made their appearance.—*Lancet*, 1901, vol. clx., p. 2.

Selenium as a Toxic Agent.—Drs. F. W. Tunnicliffe and O. Rosenheim speak of the difficulties in the way of ascribing all of the cases of neuritis in the recent Manchester epidemic to the action of arsenic and suggest that perhaps selenium, which is highly poisonous and an invariable accompaniment of pyrites, is responsible for some of the symptoms. Its part, however, is purely subsidiary to that played by arsenic.—*Lancet*, 1901, vol. clx., p. 318.

Arsenical Poisoning in Beer.—Dr. W. B. Worringdon makes some comments on symptoms seen during the epidemic of arsenical neuritis in Manchester. Sensory disorders seem to have been out of all proportion to

the amount of beer or stout consumed. The most obtrusive phenomena were : (1) Numbness and tingling, which came on rapidly, in both hands and feet. In some a painful sense of a burning character in the soles of the feet, making walking undesirable, was all that was noted. (2) Pain, often most acute on pressing the soles of the feet, especially at the heel and ball of the great and little toe. In nearly all cases the pain on moving the joints was excessive, and especially so on pressing the muscles; this latter symptom was also noted in a number of cases in the forearm muscles. (3) Several of the patients showed a flushed appearance of the sole, especially at the great toe and heel, rarely spreading on to the dorsum of the foot, and associated with pain, making the picture of erythromelalgia, but the swelling, which when associated with pain and redness is described as typical of erythromelalgia, was seen in but one case. (4) Objective impairment of sensation was absent. (5) The knee-jerks were often present and at times unusually brisk.—*British Medical Journal*, 1901, No. 2088, p. 10.

Toleration of Arsenic.—Some observers have maintained that it is possible that the picture of arsenical poisoning from beer at Manchester was a trifle overdrawn, and Dr. R. W. Mackenna, of Liverpool, has collected a series of statistics from the Liverpool Skin Hospital bearing on the tolerance of arsenic in which he shows that, for Donovan's solution at least, patients can take 0.409 grain of arsenous iodide daily for months without untoward effects. According to these figures, an ocean of Manchester beer would have to be consumed in order to induce toxic effects. The arsenic eaters of the Tyrol are classical proofs of the toleration which may be enjoyed. It may be that the combination of arsenic and alcohol has a particularly pernicious effect, either as a result of their combined toxic actions, or because of some chemical interchange between the menstruum and the salt whereby the toxicity of the latter is increased.—*British Medical Journal*, 1901, No. 2089, p. 85.

Treatment of Rheumatic Fever.—Dr. Arthur P. Luff, as a result of his experience, believes that rheumatic fever is most successfully treated by giving an alkaline bicarbonate in combination with a salicyl compound. Twenty grains of sodium salicylate and 30 grains of potassium bicarbonate should be given every two hours until the pain is relieved and the patient is fully under the influence of the drug, when the same quantities should be given every four hours until the temperature has become normal. Later, 15 grains of the salicylate and 20 grains of the bicarbonate should be given every four hours until all joint symptoms have disappeared and then three or four times a day until two weeks have elapsed. Absolute rest in bed must be enforced throughout. The statement is made that larger doses of the natural salt than of the synthetic product can be borne by the patient, hence the natural salicylic acid should be specified. If the sodium salicylate is not well borne, salicin may be employed advantageously. If after the expiration of twenty-four to thirty-six hours the joints are painful, small blisters applied above and on either side of the joint will, as a rule, rapidly remove the pain and the swelling. Tincture of iodine about the joint is also recommended. The use of oil of wintergreen—methyl salicylate—is still

more efficacious as a local application. For the relief of general pain, opium, as Dover's powder, or the newer analgesics, phenacetine, etc., may be employed. Brandy is indicated as a heart stimulant, being especially important in cases complicated with endocarditis, pericarditis, or myocarditis. Especial stress is laid on the fact that the disease is rarely cured within four or six weeks, and hence great care must be exercised by the attending physician that the patient, relieved of pain, is not permitted to move about. The patient has latent rheumatism, and even the mildest exercise is apt to induce a relapse, which is usually attended with cardiac complications. This caution is to be particularly observed in treating children. The probability of mild cardiac involvement in almost every case should be borne in mind, and hence the heart should receive careful attention. Opium is of great value in the early stages of endocarditis or myocarditis or pericarditis, and strychnine and ammonium carbonate seem more available than digitalis when there is dilatation and failing cardiac power. Ice-bags, leeches, and opium are trustworthy remedies for pericarditis. Hyperpyrexia seems to be less prevalent under modern methods of treatment, but in those that do not respond to the salicylates, hydrotherapeutic procedures are advisable.—*Practitioner*, 1901, vol. lxvi., p. 64.

Treatment of Pneumonia.—Dr. Thomas R. Brown, after a short review of the various shifting modes of treatment of this disease, says that the failures of the past should not be forgotten, and that no line of treatment should be followed in which the good does not definitely outweigh the bad. Pneumonia is not a disease of the lung solely, but also a general toxæmia, and thus in discussing the subject the possibilities of direct and indirect treatment should be considered. The early work of the Klemperers gave much encouragement to the hope of the probable efficacy of an antitoxin; thus far, however, the results have been problematical, but the attitude at the present time is promising. As to the advances along the indirect or symptomatic mode of treatment, the author believes that the best results are obtained by careful nursing, diet, hygiene, and by the systematic use of hydrotherapeutic measures during the entire course of the disease, cold sponging and cold packs being more practical than the full tub. Saline infusions are to be employed in the patients who have faint heart sounds and a weak pulse. One or two pints should be used. Inhalations of oxygen or medicated oxygen vapors are valuable in extreme cases. Morphine for pain, alcohol and strychnine for stimulation, are the most reliable drugs. Caution should be taken that thorough disinfection of the sputum is carried out.—*Maryland Medical Journal*, 1901, vol xliv., p. 1.

Treatment of Arsenical Neuritis.—Dr. Judson S. Bury, of the Manchester Infirmary, has had exceptional opportunity to see numerous patients by reason of the recent epidemic of arsenical poisoning at Manchester. Heretofore some seventy to eighty cases were on record, but this epidemic affected thousands. In the treatment followed at the Infirmary the absolute withdrawal of the cause—beer—was enforced, both because of the arsenic and the alcohol. Rest in bed is advisable. Massage is distinctly contraindicated. For the relief of the pain hot fomentations are excellent. These are

best applied intermittently—a fomentation being placed on the affected part for one-half hour and then re-applied after a lapse of four hours. Vapor baths are of value if the heart's action is not affected thereby. Potassium iodide and the salicylates, alone or in combination, are effectual, and the newer analgesics, antipyrine and phenacetine, are valuable in many cases. Strychnine should never be used in the acute stages. The importance of careful nourishment was demonstrated forcibly. Boiled milk, beef-tea, beef extracts, broths, and soups are valuable. Peptonized foods are indicated for gastric irritability, and at times are nutrient. Enemata are necessary. After the acute stage is over massage, electricity, and tonics are efficacious. Cod-liver oil and strychnine are useful, but arsenic is to be avoided.—*British Medical Journal*, 1900, No. 2084, p. 1629.

Epilepsy.—Dr. C. Wickel has proposed a modification of the Flechsig opium treatment for this affection. The patient is started on one grain of opium three times a day. On the third and fifth days there is an increase of one-fifth grain with each dose and a similar increase every second day thereafter until the fifty-first day, when the patient is taking fifteen grains of opium in twenty-four hours. On the next day the patient is given ninety grains of mixed bromides. This dose is increased fifteen grains a day until a total of one hundred and thirty-five grains is reached. The patient continues to take this for a couple of weeks.—*Berliner klin. Woch.*, 1900, No. 48.

Coffee and the Nervous System.—Dr. W. M. Leszynsky maintains that ill effects following the use of coffee are by no means uncommon. Much of the present-day nervousness he attributes to its immoderate use. The symptoms complained of are general headache and nervousness, apprehension regarding the future, mental depression and irritability, insomnia or restless sleep, bad dreams, sudden awakenings, vertigo, general tremulousness, diminished muscular power, loss of appetite, frequent eructation, and constipation. Objective symptoms, in addition, are coated and tremulous tongue, tremor in the eyelids when standing with closed eyes, in some cases dilated pupils, tremor in outstretched hands, rapid pulse of low tension and frequently irregular, ranging from 90 to 130, exaggerated reflexes, and a varying amount of reflex irritability. For the treatment of the condition it is wise to limit the patient to one cup of coffee in the morning or to substitute one of the cereal coffees. A useful mixture, to be used as a sedative, is the following: Sodium bromide, fifteen grains; solution of potassium arseniate, two minims; compound tincture of gentian, one-half ounce; fluid extract of kola, fifteen minims. At the end of five or six weeks the bromide should be discontinued and tonic pills containing arsenic, quinine, and strychnine taken. Recovery should follow in from three to six months. —*Medical Record*, 1901, vol. lix., p. 45.

Yohimbin: A New Aphrodisiac.—Dr. L. Löwy reports on the alkaloid or mixture of alkaloids obtained from the bark of a number of the Rubiaceæ. They exert a marked effect on the vascular supply of the genital organs. Thoms has given the formula $C_{23}H_{32}N_2O_4$ or $C_{22}H_{30}N_2O_4$ to this body, and Oberwarth has determined the lethal dose for guinea-pigs to be one-sixth

of a grain to the kilogramme of animal. In cold-blooded animals, when given in increasing doses, there is a gradual weakening of the functions of the spinal cord, the heart's action is slowed and depressed, and respiration is also depressed. Death is due in frogs to paralysis of the heart's action. Blood-pressure is diminished. In man, according to Löwy's researches, it has a distinct action in the genital sphere. Doses of Yohimbin hydrochloride of from one-tenth to one-sixth of a grain in water, 1 : 500, produce a marked congestion of the ovaries and testicles, with swelling and increase of sexual desire. In a series of cases of Mendel's the impotence of locomotor ataxia was not affected, but the loss of power in prostatic disease and sexual neurasthenia was favorably influenced.—*Therapeutische Monatshefte*, 1900, vol. xiv., p. 597.

Cough in Phthisis.—Dr. J. R. L. Daly advises for the treatment of the persistent hard, dry cough of phthisis, with little or no mucus, the following combination: Camphor, two grains; heroin, one-twelfth of a drachm; creosote, one drop. These are combined, with a proper vehicle, into pills and given in sufficient quantity to produce the necessary relief. This combination not only relieves the cough, but improves the appetite, and, by means of the stimulating action of the camphor, does away in large part with the depression so frequently observed in this affection. The vomiting is prevented by preventing the severe cough.—*New York Medical Journal*, 1901, vol. lxxiii., p. 16.

Physiology and Therapy of Rontgen Rays: The Treatment of Lupus.—Dr. J. Hall Edwards quotes Tesla as stating that if an aluminum screen be placed between the tube and the exposed part no irritation of the skin follows. Without the screen, following a few minutes' exposure, a tingling and sensation of warmth was experienced. Later there was deep-seated pain, and the exposed hand was swollen and red; acute inflammation followed; the hair was destroyed and nail-growth impaired. These effects probably are due to the presence of the platinum (Tesla). Beyond a short distance no effects were noted, irrespective of the length of exposure. The appearance of the skin is like that following contact with a red-hot iron. The writer, using a less powerful apparatus, finds the harmful effects practically absent. Apart from a special susceptibility of the patient, no ill effects are produced, either in taking radiographs or in using the fluorescent screen, provided that the tube is not brought too near and exposures are short. For therapeutic purposes just the opposite conditions are required for the destruction of tissue. To localize the action of the rays and prevent destruction of healthy tissues round about, an aqueous gelatin solution containing finely powdered iodoform is applied to the healthy skin. Results of treatment of lupus are satisfactory. A more complete knowledge of the length of exposure required and of the after-treatment is still lacking. Following exposure to the rays there is a period of inactivity. That the X-rays themselves have very little or no part to play in the production of burns is shown by the aluminum plate, which prevents burns and is itself wholly transparent to the rays. An electrical origin may be found—*e. g.*, electrostatic action or electrolytic discharge produced in the skin by the near passage of a current of high potential. In sup-

port of this is the fact that an electrical discharge is felt on the skin of a patient in close proximity to a highly charged Crooke's tube. A distinct crackling is heard and felt. It is noticeable in dry skins but absent in those that are moist.—*Edinburgh Medical Journal*, 1900, vol. vii., p. 139.

Strychnine as an Ecbolic.—Dott. Robecchi has experimented with various doses and is certain that in no instance does it have a direct influence upon uterine contraction, but that the good effects ascribed to it, by various authors, from prolonged administration during pregnancy are due to the general action of the drug and not to any selective action upon the uterus. —*Gazetta degli Ospedali e delle Cliniche*, 1900, No. 96, p. 1008.

Melan: A New Stimulant for Wounds.—Dr. M. Horovitz reports a new product prepared by condensation of the flowers, leaves, and stones of *melilotus cæruleus*, one of the native legumes of South Europe and America. It is widely cultivated in Switzerland and Southern Germany, where it is used as a dressing for wounds. It is an oily substance, dark brown in color, and markedly aromatic. It is said to have a marked stimulating action on ulcers, and, when combined with a mild antiseptic, its effects on the regeneration of new skin are prompt. The author reports excellent results when used with yellow wax in the proportion of 2 to 3, and with zinc oxide and magnesia in persistent ulcers, ulcus durum, ulcus molle, and ulcus cruris, rhagades, anal fissures, herpes preputialis and balanitis, and in various forms of chronic eczema.—*Centralblatt für die gesammte Therapie*, 1900, vol. xviii., p. 641.

Syphilis and Calomel Injections.—Dr. Alfred Fournier, in discussing the value of hypodermatic injections of calomel in the treatment of syphilis, concludes that the routine treatment of syphilis by this means is not to be encouraged. It presents too many disagreeable features if it is necessary to continue its use for a more or less protracted time; but in sudden, severe inroads of the syphilitic virus, such as occur in spinal or cerebral complications, iritis phagedenia, palmar and plantar laryngitis, and at times in some of the syphilitic pneumopathies, it may be recommended strongly. It is, all things considered, a temporary, provisional mode of treating the disease, which serves a useful purpose, with certain limitations.—*Revue de Therapeutique*, 1900, vol. lxvii., p. 721.

Iodism.—Dr. Douglass W. Montgomery makes a useful contribution to the untoward action of the iodides. He holds that small doses do not induce iodism more rapidly than larger ones, but the contrary teaching has had credence because of the fact that small doses have frequently given rise to iodism, which, on the continuance of the drug in larger amounts, has disappeared. This is explained by reason of the fact that many people soon become accustomed to the drug, and that tolerance is established shortly after the early irritation induced by the smaller dosage. If administration of the iodides is commenced in small doses, seven to eight grains, iodism rarely occurs. Potassium iodide may be tolerated by the rectum when it would not be by the stomach, and can be given as an enema in water, or, better, in milk, fifteen

to thirty grains, three times a day. Personal idiosyncrasy is the most important element, and nothing will absolutely prevent iodism if the tendency exists. The most important agents capable of modifying some of the symptoms of iodism are belladonna, arsenic, morphine, salol, sulphanilic acid, sodium bicarbonate, and sodium chlorate. Belladonna in five-minim doses of the tincture is sufficient in relieving the coryza. Fowler's solution is the best associate drug if an iodide causes indigestion. One drop to fifteen grains of the iodide is the proportion recommended. Potassium bromide, sulphanilic acid, and sodium bicarbonate have all been recommended, but the author has not obtained valuable results. Sodium chlorate and salol, when given, have permitted of larger doses without the causation of iodism. —*Medical Age*, 1900, vol. xviii., p. 765.

Treatment of Typhoid.—Dr. F. C. Keays gives the treatment of typhoid followed at the New York Hospital. The tub bath is used as a routine procedure when the temperature reaches 103° F. It is given every three hours, for ten to fifteen minutes, first at a temperature of 80° F. and gradually reduced to 70° to 65° F. Cooled alcohol sponge baths are used when tubbing cannot be adopted. The insomnia is treated by trional and codeine, fifteen and one grains respectively, given by the mouth, or, if there is nausea, by the rectum. Whiskey is also of value, especially in those patients who have habitually used alcoholic drinks. Distention of the intestines by gases is treated by turpentine stupes or by five to fifteen minims of turpentine by the mouth or rectum. Oxalate of cerium, five grains, and sodium bicarbonate, ten grains, are useful for the nausea. The diet should be wholly liquid in the early stages.—*Medical Record*, 1900, vol. lviii., p. 851.

Poisoning by Coal-tar Naphtha.—Dr. G. Herbert Douthwaite reports a case of poisoning by ingestion of this substance occurring in a girl, aged five years, who had evidently taken from two to three ounces. She was seen within two hours and was found then comatose, breathing rapidly and heavily. There was a strong benzol odor to the breath, the face was dusky, somewhat livid, and the extremities were clammy and cold. The pupils were dilated and the conjunctivæ anæsthetic. Artificial respiration, brandy, and respiratory stimulants were successfully used and the child recovered from the poisoning, but two days later developed an acute general bronchitis, from which she died seven days later.—*Lancet*, 1901, vol. clx., p. 245.

Treatment of Gastric Ulcer.—Dr. Mayo Robson says, with reference to this question, that the treatment of this condition is at first essentially medical, and if properly carried out and for a sufficient length of time it is usually completely successful; but in many cases, either from the uncertainty of diagnosis or from the impatience of the patient, care in diet and rest are not persevered in for a sufficient length of time and relapses result; treatment is again resorted to, and relief, but not cure, follows, until in the long run complications supervene or the ulcer becomes chronic, when surgical treatment is in many cases the only method capable of affording relief.—*British Medical Journal*, 1901, No. 2092, p. 257.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC; CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE; VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

The Treatment of Persistent Occipito-posterior Positions of the Vertex.—Under this title BRODHEAD, in a paper read before the New York Obstetrical Society (*American Journal of Obstetrics*, December, 1900) advises the use of forceps as rotators in persistent posterior rotation of the vertex during labor.

The conditions which should be present before this operation is undertaken are as follows: The head should be as well flexed as possible; the vertex should be well down in the pelvis and preferably at the vulvar outlet; the membranes must be ruptured; the cervix should be fully dilated or dilatable; the bladder and rectum should be empty; last, but not least, the operator should be positive of his diagnosis of position. The patient is placed upon a table and a light chloroform anæsthesia used. The Tucker solid-bladed forceps has been superior to any other. The blades are introduced laterally at the sides of the pelvis, each blade being rotated so as to occupy a position at the side of the head, after which the forceps is locked. Unless the operator be expert it is thought safer to apply the forceps in the usual manner, the concavity of the pelvic curve looking forward, than to attempt rotation with the forceps in the inverted position. By carrying the handles of the instrument toward the thigh of the patient, toward which the concavity of the pelvic curve looks, the danger of laceration is much reduced. The operator then places two fingers upon the vertex at the sagittal suture, and when the uterus contracts it rotates the head partially, so that the sagittal suture is transverse. This is accomplished by rotating the handles of the forceps and carrying the handles downward and backward until the concavity of the pelvic curve faces the lateral wall of the pelvis. The head is then held in this transverse position until several uterine contractions and relaxations have occurred. The head is then rotated with the vertex anterior by rotating the handles, carrying them still further backward and downward. In this way the tips of the blades are kept in the middle of the pelvis, and cannot lacerate the vagina. The head is held in the oblique anterior position for several moments to allow the body to rotate anteriorly. The forceps is usually removed at this time and reapplied in the usual manner and the operation completed.

If rotation cannot be accomplished except by the use of force the head must be extracted in the posterior position. If delivery can be accomplished by the natural forces the forceps is removed. The writer reports eight cases, in four of which the vertex was upon the left side and posterior and in four

on the right side and posterior. Seven of these women had normal pelves. One, a primigravida, had a justo-minor pelvis. The operation was uniformly successful in these cases. The writer urges that the conditions essential are good flexion of the head, low position of the vertex, and attention to details.

In discussing this paper, CRAGIN said that the same methods, as a rule, were employed successfully at the Sloane Maternity. He urged the necessity for very careful and thorough diagnosis before the application of forceps. The value of the solid-bladed instrument he considered as proved. He had found it of value to introduce one of the blades in the median line and posteriorly, using it as a vectis in starting the rotation of the child's head, then introducing the other blade laterally. He believed that rotation of the forceps was the best treatment for the majority of such cases.

EDGAR had used forceps as rotators for many years to advantage. He preferred the solid blades in these cases. He also believed that the forceps could be adapted to the child's head. In diagnosis he found it useful to search for the ear as a landmark, and had found diagnosis not always easy in these cases. He had not found manual correction of occipito-posterior positions very successful, and he had not succeeded with combined external and internal manipulation. In many cases if the head were brought down upon the levator ani muscle and the patient let alone the case would terminate spontaneously. He believed that the forceps should be applied over the ears of the child and the head brought down to the pelvic floor; then if there were no immediate indication for delivery spontaneous birth might develop. He thought it well to bring the head down in the parturient canal in a transverse position, then to take off the forceps and reapply them, and so bring the head around to the anterior position. In occasional cases in skilful hands the reverse use of the forceps is permissible.

MCLEAN depended upon the hand in making restitution in these cases. He believed mistakes in diagnosis frequent, and that diagnosis by sutures and fontanelles is not always reliable. When the head of the child was hindered in rotation by the body he had been successful by rotating the child in the opposite direction, bringing the vertex through the larger arc of the pelvic circle. It was difficult to account for this phenomenon unless the cord, passed about the shoulders of the child, hindered its normal rotation.

TUCKER thoroughly indorsed the rotation of the occiput by forceps. He mentioned a case in which ventral fixation had been done when the occiput turned behind and rotation was hindered by a deformed coccyx. The head was turned to the front by forceps. In this patient's next labor posterior rotation again occurred, and delivery was effected in the same manner successfully. He believed that if the operation were done promptly before the parts became œdematous the pelvic floor and vagina would not be injured by the operation. He preferred the solid-bladed instrument.

VON RAMDOHR believed that after the shoulders had engaged in the pelvis with the head on the perineum, it was impossible to twist the head through an arc from 90° to 150° without great danger. When the shoulders are not fully engaged and the head is not absolutely on the perineum, this is possible. He believed that when the head is above the superior strait, with the occiput posterior, we can never be assured that anterior rotation is not the result of the natural forces instead of manipulation employed.

The Secretion of Milk.—In *L'Obstetrique*, November, 1900, BUDIN publishes a paper in which he gives several practical points obtained by clinical observation of the secretion of milk.

He calls attention to a not uncommon class of cases in which the secretion of milk becomes established, but is for some time not sufficient to meet the needs of the child fully. Experience has shown that if the child be nourished by suitably prepared cow's milk and the mother be allowed to nurse the child in addition both do well. The child ceases to lose in weight, but gains, and the mother in a few weeks has an increased secretion of milk, which usually enables her to dispense with artificial feeding. He is opposed to abandoning the nursing of the child because the secretion of milk may not be abundant. He would supplement the mother's supply, giving the mother proper nourishment, and would hope and expect that later she would be completely able to feed the child. He also calls attention to the fact that the supply of breast milk varies in accordance with the child's needs. This is demonstrated by comparing the weight of the child with the quantity of milk furnished and also by observing the secretion of milk in the case of twin pregnancies. Here the supply increases to meet the needs of the two children in proportion with their growth.

He narrates some interesting cases in which the secretion of milk has been resumed after a considerable pause. In one instance a woman had been separated from her child in the country, and hearing that the child was ill, returned thirty-four days after its birth. In this case the breasts were well formed, soft, and large, although when the child began to nurse fluid was not present in them.

Abdominal Tumor (Included Fœtus).—In the *British Medical Journal*, 1900, No. 2081, WRIGHT and WYLIE report the case of a female child, aged three months, whose mother gave the following history: The child's abdomen had been swollen since birth, the labor being long and difficult. The abdomen had gradually increased in size and the patient had difficulty in breathing, with chronic cough.

An enormous mass could be felt on the left side of the child's abdomen, reaching forward to beyond the umbilicus. The tumor was dull, its front and upper portion cystic and its posterior part solid; it was smooth and uniform. As the tumor seemed to have fluid contents it was tapped, and nineteen ounces of clear, yellow fluid were removed. This was slightly albuminous. The tumor then became considerably smaller, and its edges could be distinctly felt. It grew larger, however, until it regained its original size.

On operation the tumor was found to have wide attachments, there being a large number of vessels in the capsule. It was removed, and efforts were made to combat the shock, which became severe. These efforts were unsuccessful, the child dying in a few hours after the operation.

On examination the tumor was found to be an included twin or included fœtus. It was intra-abdominal, and of the type known as amorphous or anideus. Some thirty cases of included fœtus in the cavity of the abdomen have been recorded. The tumor is usually found on the left side, is rudimentary in character, and has very few recognizable viscera and structures within its mass. The cystic may be a development of the umbilical vesicle.

Hepatic Toxæmia during Pregnancy.—In the *Medical Chronicle*, 1900, p. 183, FOTHERGILL reports the case of a patient, aged thirty-two years, and pregnant for the first time. She developed great œdema of the lower extremities, scanty urine and abundant albumin, and much bile pigment and urates. The liver was tender on pressure and increased in size. Purgative treatment reduced the liver dulness, and fluid began to collect in the abdomen. The urine was full of bile pigment. As the patient continued to grow worse, the uterus was emptied, and a badly nourished seven months' child was born, living, and survived four days. The patient gradually rallied, and bile began to flow into the intestine. The liver decreased in size, the quantity of urea passed steadily increased, and the patient gradually made a recovery.

In this auto-intoxication of pregnancy it was interesting to observe that the uterus reacted very sluggishly to stimulation. An elastic dilator remained in the cervix for seven hours without setting up uterine contraction. While this patient did not seem to be threatened with convulsions, there can be no question that her condition would have proved fatal from the absorption of the toxins which the liver failed to remove.

Transverse Presentation and Version.—BERRY HART (*Scottish Medical and Surgical Journal*, July, 1900) contributes a paper upon this subject, in which he considers that there are three great varieties of version: The first, cephalic, not often used, and practically performed by external manipulation only. By Simpson's combined version, Hart understands those cases where the internal hand is passed into the uterine cavity to seize a foot, the external hand being also used in the version. This is the usual method for cases in which the fœtus is fixed in the pelvis. Braxton Hicks' method, where the internal fingers do not pass beyond the presenting part, while the external hand aids in the manipulations, usually has the term Hicks' bipolar version applied to it. As regards the foot and leg which should be seized in performing version, Hicks urges to seize the leg which maintains the dorso-anterior position or converts the dorso-posterior into a dorso-anterior. When the back of the child is behind he would grasp the further leg. When the back is in front he would take the leg which lies nearer. When the breech is near the os in dorso-posterior position, traction on the further leg may not alter the posterior position of the back after version, owing to the want of the necessary obliquity in the pull.

[In performing version and extraction the operator must always endeavor to bring the back of the child anterior. If both thighs be grasped, a rotary motion upon the thighs will usually succeed in correcting any tendency on the part of the back to turn behind. If the uterus resists this manipulation, chloroform may be used to overcome its contraction.—ED.]

Puerperal Inguinal Parametritis.—A very interesting clinical lecture on this important subject by HERMAN is reported in the *British Medical Journal*, 1900, p. 1273. The writer confines himself to the common form of puerperal cellulitis exclusively. He believes that during pregnancy the cellular tissue about the uterus becomes loosened, that it is more vascular than usual, and, hence, that it is naturally a fertile soil for the development of inflammation. In the most common form the inflammation spreads into the in-

guinal region, producing a swelling in the groin. This may end in absorption or in suppuration. When the latter takes place it points above the middle of Poupart's ligament.

We are not able to state definitely the precise cause of this affection. The streptococcus, the staphylococcus, and the bacillus coli communis have been found in the pus. The effects of the same germs vary in different cases. In one a slight local inflammation may result, with very serious septic depressions, while in other cases a more extensive inflammation seems to be well resisted. Attempts to produce cellulitis in animals by the injection of cultures of germs have not been successful. There can be, however, no question that parturition favors the occurrence of this condition, whether by mechanically setting free the germs in these tissues cannot be definitely stated.

Some have thought that laceration of the cervix is a cause. Deep laceration, however, is often found in patients who have never had cellular inflammation, while in other cases no laceration of the cervix is present. Gonorrhœa is not a frequent cause, nor does chilling the body seem to produce it. The labor does not seem to have been especially difficult with these patients. In fact, in two-thirds of the cases there was no difficulty in the labor. The disease occurs more frequently on the left side than on the right.

When we consider the period of the puerperal state at which this complication shows itself we find that many cases are ill from the very day of delivery, while others are affected only after the first week. The later the illness comes on the greater seems to be the danger of suppuration. Pain is a paramount symptom referred to the affected side, and described as burning or shooting. Rigor occurs in about one-quarter of the cases, and varies in severity. These patients were naturally depressed, having a temperature of from 99° to 106° F.

The physical signs were found in swelling, which, starting from the anterior superior spine, approaches the level of the umbilicus. It then runs horizontally inward.

As regards treatment, it must be early, thorough, and persistent. Its essential element consists in absolute rest. This many patients cannot obtain in their own homes, and, hence, should soon be transferred to hospitals. So soon as evidence of suppuration is present the tissue should be incised and the pus allowed to escape. This is usually marked by very decided and permanent improvement.

As regards the length of the illness, the shortest case observed lasted twenty-three days and the longest one hundred and forty-nine days. Among those cases in which pus formed the average length of the illness was ninety-three days. When the inflammation spreads toward the psoas muscle the patient flexes the thigh and complains of considerable pain in this region. These cases are severe. In some cases albuminuria was present without casts and pus. In treatment the most essential thing at first is to keep the patient at absolute rest and maintain her strength by food, using narcotics if necessary. The functions of the body should all be stimulated and a close watch kept of the temperature and of the physical signs indicating suppuration. So soon as pus forms it should be allowed to escape freely.

Eclampsia at Six Months' Pregnancy Treated by Saline Infusion and Veratrum Viride.—BALLANTYNE (*Scottish Medical and Surgical Journal*, July, 1900) reports the case of a multipara, six months pregnant, who had typical eclampsia. The patient was treated by veratrum viride hypodermatically and by the injection of saline fluid into the loose tissue below the breasts. Abortion was also induced, though very slowly, as the os and cervix were so small that an elastic bag could not be introduced. The patient gradually made a good recovery. An interesting point in the case was the behavior of the various specimens of urine obtained. The urine was highly albuminous, and did not decompose as it usually does. It was observed that the urine passed during the eclampsia or just before it did not undergo decomposition, as it normally does.

[Nothing is said regarding the percentage of solids contained in the urine, nor the quantity of urea. The case seems to have been a favorable one for treatment, because albuminuria is, in our experience, less dangerous than a profound and slowly developing toxæmia.—ED.]

When Should Interference Be Practised in Difficult or Delayed Labor, Especially in Primiparæ?—MCLEAN contributes to the *Medical News*, 1900, p. 1033, a paper under the above title. He lays special stress on the preparation of the maternal tissues for delivery. By the natural processes the tissues are so softened that traumatism is reduced to the lowest possible point. It is most important to distinguish between a condition of absolute failure in the progress of labor and one which only marks the usual slow development of the natural process of softening and dilatation. If interference be practised before the tissues are ready, traumatism is almost inevitable. If, on the other hand, operative interference be employed when the tissues are ready for delivery, no serious injury should follow.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D.,

OF NEW YORK.

Post-operative Ileus.—WINTERNITZ (*Centralblatt für Gynäkologie*, 1900, No. 40) distinguishes three varieties of post-operative ileus, viz., that due to septic peritonitis, to adhesions of the intestines of non-septic origin, and a third form caused by pressure from clamps, gauze, etc. The latter can be avoided in vaginal operations by extreme elevation of the pelvis.

His conclusions with regard to the treatment of this complication are as follows:

1. In cases of non-septic intestinal obstruction following vaginal operations an attempt should first be made to separate the adhesions per vaginam;

this failing, the abdomen should be opened. 2. When ileus follows an aseptic cœliotomy the wound should be reopened and the distended gut incised in several places. 3. The same treatment is applicable to cases of paralysis of the intestine. 4. Operative treatment is useless in post-operative septic peritonitis.

Vaginal Cœliotomy.—FRITSCH (*Centralblatt für Gynäkologie*, 1900, No. 40) lays down certain rules for the guidance of the surgeon, viz.: Vaginal ovariotomy is justifiable only in the case of cysts which are clearly benign in character. Myomectomy by the vaginal route should be limited to cases in which the tumor is freely movable and does not exceed in size a child's head. An old retrouterine hæmatocele should be attacked per vaginam only, nor should an attempt be made to extirpate the sac. In cases of recent ectopic gestation, on the other hand, larger than the first, which are not easily accessible from below, the abdominal route is to be preferred. Pus-sacs are best emptied per vaginam, but if the operator aims to remove the diseased adnexa and spare the uterus he should elect cœliotomy.

Complications of Uterine Fibroids.—FREUND (*Centralblatt für Gynäkologie*, 1900, No. 40) calls attention to the significance of a varicose condition of the veins of the pelvis and lower extremities in connection with fibroid tumors of the uterus. Not only is there considerable danger of hemorrhage during and after operation from distention of the pelvic veins, but pulmonary embolism is a possible result.

The writer reports two fatal cases in which the patients complained soon after operation of severe pelvic pains, with pressure upon the bladder and rectum, followed by a sudden relief of the symptoms, but with restlessness, rapid pulse, and collapse, the temperature remaining normal. In both instances a large hæmatoma was found in the broad ligament, which had exerted so much traction upon the stumps that the ligatures had slipped. The hemorrhage was due to the puncture of large veins below the points at which the ligatures were tied. The same writer describes degenerative changes in fibroids due to sclerosis of the peripheral arteries and venous thrombosis, without purulent foci or evidences of septic micro-organisms. The symptoms due to this condition are those of auto-intoxication, but are quite different from the sapræmic or septic poisoning referable to suppuration in the growth. In the case reported the diagnosis before operation was strengthened by the presence of acetone in the urine.

Lowering of Blood-pressure after Gynecological Operations.—SCHRÖDER (*Centralblatt für Gynäkologie*, 1900, No. 40), as the result of numerous observations, finds that there is a marked difference in the blood-pressure after the removal of diseased adnexa and of neoplasms of the ovaries and uterus, it being lower in the former case. There was a sudden drop in the pressure during the operation, the curve rising gradually for a few days and then declining to its former level. During long operations the fall was often as great as forty or fifty millimetres, but within an hour or two the pressure increased, reaching its highest point on the first night or following days. Between the eighth and fourteenth the curve was lower than at any time,

rising slowly, with slight remissions, to fall again for a short time when the patient first sat up.

In severe operations and when the heart was strongly affected by chloroform the blood-pressure increased very slowly and seldom exceeded the average point immediately after operation. In fatal cases the rise was followed by a sudden and permanent fall.

In pus cases the primary rise was greater than in simple ovariotomies, and after a slight fall continued. After vaginal operations diminution of blood-pressure was less marked and the succeeding increase less than after cœliotomy.

Ovarian Cyst Developing from Remains of Ovary.—WALDSTEIN (*Centralblatt für Gynäkologie*, 1900, No. 40) reports four cases from Schauta's clinic in which small portions of cystic ovaries were left behind during complicated operations, the uterus being removed in two instances. In each case a cystoma developed, necessitating a second operation for its removal. The writer concludes that the practice of leaving portions of the ovary after extirpation of the uterus is one of questionable value, the advantages being offset by the possibility of the development of future complications.

Etiology of Climacteric Hemorrhages.—THEILHABER (*Münchener med. Wochenschrift*, 1900, No. 14) believes that in the majority of the cases hemorrhages before the menopause are due to muscular atony. The atrophy of the uterine muscle which is present after the climacteric takes place gradually and is associated with stenosis of the arteries, so that even when the uterine contractions are feeble there is but slight loss of blood. If, however, this atrophy takes place before the stenosis occurs, the muscular contractions are too feeble to control the hyperæmia, hence there result profuse menorrhagia, œdema, and hypertrophy of the uterine tissues.

This same atony is the cause of menorrhagia in young girls, in chlorotic and tubercular patients. The prolongation of menorrhagia in patients with uterine fibroids is doubtless due to atrophy of the uterine muscle, with resulting prolonged hyperæmia of the mucosa and the development of endometritis fungosa. In consequence of this hyperæmia the tumor may grow rapidly at this time, while submucous interstitial growths tend to become polypoid.

Pathogenesis of Fissure of the Anus.—ROSENBACH (*Berlin. klin. Wochenschrift*, 1900, No. 10) believes that the pain in fissure of the anus is due primarily to the ulcer and secondarily to spasm of the sphincter muscle. The latter is most marked in patients with circulatory disturbances of the pelvis, as at the climacteric or during pregnancy, in whom, in addition to habitual constipation, there is a general hyperæsthetic condition.

In his opinion it is not sufficient to dilate the sphincter forcibly. In addition to regulating the bowels he secures tolerance of the sphincter by instructing the patient to pass the finger into the anus several times daily and later to use rectal tubes of increasing sizes. Under this treatment within four or five days the pain and tenesmus become less marked and eventually disappear.

Prolapsus Uteri in a Young Girl.—VILLEMIN (*Gaz. hebdom. de Méd. et de Chir.*, 1900, No. 15) reports the case of a girl, aged fourteen years, with hypertrophy of the cervix and prolapsus, the cervix protruding an inch from the vagina. The patient stated that two years before, while lifting a heavy weight, she was seized with a severe pain in the abdomen and fainted. On her recovery she felt the protrusion, but concealed the fact on account of modesty.

The cervix was amputated and hysteropexy successfully performed.

[That these cases are not rare is shown by our recent experience in two similar cases, the patients being virgins, aged eighteen and nineteen years respectively. Both gave the history of a severe muscular effort. The cervix was amputated in both instances, followed by ventrosuspension in one and shortening of the round ligaments in the other, with equally satisfactory results.—ED.]

The Ovaries in Osteomalacia.—SCHARFE (*Centralblatt für Gynäkologie*, 1900, No. 45) denies that certain pathological changes in the ovary are constant in cases of osteomalacia. From microscopical studies of ovaries removed from three osteomalacic patients he infers that neither hyalin degeneration nor hypertrophy of the vessel-walls is characteristic of this condition, as has been affirmed.

Supravaginal Amputation for Uterine Fibroids.—GOW (*Scalpel*, 1900, No. 2) reports forty-seven operations, with one death. He always operates by the abdominal method, preserving the ovaries unless they are actually diseased. The stump is carefully sutured in tiers before the peritoneal flaps are united over it. In addition to tying the uterine and ovarian arteries separately the stump is transfixed with a double ligature, which is tied on either side.

Fatal Cases of Gonorrhœal Salpingitis.—KOSSMANN (*Münchener med. Wochenschrift*, 1900, Nos. 10 and 12) reports two cases of subacute pelvic peritonitis in which conservative operations were performed on the ovaries by the vaginal route, the tubes at the time of operation presenting no evidence of pus. In both cases the patients succumbed to diffuse peritonitis, the pus from the abdominal cavity containing pure cultures of gonococci, but no other micro-organisms.

Operation for Adherent Uterus.—STEFFECK (*Centralblatt für Gynäkologie*, 1900, No. 46) reports twenty-five cases treated successfully by the following method: Douglas' pouch is opened and the posterior vaginal wall is divided longitudinally as low down as the attachment of the rectum. Two fingers are introduced, and the adhesions are separated under the uterus, is perfectly movable, and the fingers can be passed over the fundus. The wound is then closed and the anterior vaginal fornix is opened. While the uterus is drawn downward with a volsellum, anterior adhesions are separated and the fundus is sutured to the upper angle of a longitudinal incision in the anterior vaginal wall, which is carried downward from the transverse one. The wounds are then closed with catgut.

The writer emphasizes the fact that the adnexa must be removed when they are diseased. He reserves abdominal section for the most severe cases.

[It is difficult to understand how one can give such unqualified preference to vaginal over abdominal section for the separation of intrapelvic adhesions. Aside from the fact that the operator can never be sure that he has separated all such adhesions when guided by the touch alone, the opportunities for intelligent conservative work on the adnexa are so much better by the abdominal route that it must commend itself to most American surgeons. —ED.]

Hemorrhages at the Climacteric.—LANDAU (*Therapie der Gegenwart; Centralblatt für Gynäkologie*, 1900, No. 46) insists upon the importance of regarding all hemorrhages at this time with suspicion, and believes that women should be examined from time to time in order to be sure that their genital organs are in a normal condition.

While local atheroma of the arteries, senile endometritis, etc., may account for this symptom in some cases, one should always regard cancer as the most probable condition. In this connection he refers to a series of 190 cases investigated by an English gynecologist in which neoplasms were found in 100 patients, half of these being malignant.

Irritable Bladder.—KNORR (*Ibid.*) describes this condition as marked by frequent micturition and tenesmus, which is frequently regarded as a pure neurosis, though he has rarely found these symptoms present without marked anatomical changes.

In sixty-three cases in which the symptom-complex of irritable bladder was present the organ was not entirely normal in a single instance. In forty-seven pericystitis, adhesions, pressure, etc., were demonstrated to be the cause of the irritability. The treatment recommended is irrigation and distention of the bladder with a solution of boric acid.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

EDWARD JACKSON, A.M., M.D.,
OF DENVER,

AND

T. B. SCHNEIDEMAN, A.M., M.D.,
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC.

Metastatic Gonorrhœal Conjunctivitis.—DR. FAGE (Amiens) reports the sudden appearance of all the symptoms of severe purulent conjunctivitis, except the discharge, in a man of forty-five, who was suffering at the time from an active gonorrhœa. Bacteriological examination entirely failed to show the presence of the gonococcus in the conjunctiva. Under soothing appli-

cations the conjunctivitis began to improve in two days, and in eight days, except for some small ecchymoses, the eyes were quite well.—*Recueil d'Ophthalmologie*, April, 1900.

[Some cases of this kind have been recorded before, and probably they are less rare than the records would indicate. Morax and Elmassian have demonstrated that the toxines of the gonococcus are entirely able to produce the symptoms of gonorrhœal ophthalmia, after the destruction of the gonococci in the culture fluid, or their removal by filtration. But the assumption that the toxines could reach the conjunctiva in sufficient concentration through the general circulation seems rather a bold one, although no more reasonable explanation for such an attack can now be suggested.—ED.]

Retinal Thrombosis and Phlebitis of Gonorrhœal Origin.—DR. GALEZOWSKI (Paris) ascribes to the influence of a general gonorrhœal infection alterations and thrombosis of the retinal veins, in a man who had suffered for ten years with a urethral discharge, with repeated attacks of rheumatism and violent sciatica, but who was free from syphilis and other probable causes for the vascular disease.—*Société d'Ophthalmologie de Paris*, April 3, 1900.

Tincture of Iodine for Corneal Ulcers.—H. FRIEDENWALD (Baltimore) has employed this treatment in twenty-five cases of dendritic keratitis and marginal ulcer of the cornea without failure to bring relief and without untoward symptoms. He makes the application in the following manner:

A bit of absorbent cotton is wrapped firmly about a fine wood toothpick, so as to form a narrow, firm swab. This is dipped into the tincture of iodine, and the excess allowed to drop off. The eye having been prepared, by instilling cocaine and a drop of fluorescine, the ulcerated area is thoroughly scrubbed until a distinct brown discoloration of the tissues is seen. The neighboring epithelium is very much loosened and curls up in all directions. It is important to touch this and especially the minute infiltrations seen a millimetre or two away from the main line of ulceration; for the progress of the disease is usually this: that after these infiltrations are observed the furrowed ulceration soon makes its appearance. The only error which is likely to be made is to apply the iodine too cautiously. He has never seen any ill effect from its being used too freely. Since he has become bolder in using it, it is rare that a second application is needed.

The application is usually followed by some pain, lasting for a few hours. The eye is bandaged and an ointment of boric acid, iodol, or the like is applied. The bandage can usually be dispensed with after a day or two, though it may be well to use the ointment a few days longer.—*American Journal of Ophthalmology*, July, 1900

Insomnia from Errors of Refraction.—A. TROUSSEAU (Paris) finds that patients troubled with insomnia generally suffer from headache, although they may not emphasize this symptom. The headache is in the great proportion of cases due to fatigue of the eyes, although it may come on during the night. The fatigue may be due, in hyperopic or astigmatic eyes, to pro-

longed near work during the evenings. In myopes it arises from use of the eyes in distant vision. In some cases the insomnia is the only symptom noted, but the relief from eye-strain is sufficient to secure normal sleep.—*Archives d'Ophthalmologie*, June, 1900.

Iritis in the Prognosis of Syphilis.—A. TROUSSEAU (Paris) reports a series of observations in support of a view of Fournier, that iritis in syphilis is of grave prognostic significance. Of 61 cases 21 had passed from under observation; of the other 40, 6 had experienced but slight trouble; 12 became tabetic; 8 had various cerebral manifestations of syphilis; 2 had died, probably of cerebral or visceral lesions, and the others had suffered from serious tertiary symptoms, chiefly of the nervous system.—*Annales d'Oculistique*, May, 1900.

[Only about 3 per cent. of all cases of syphilis suffer from iritis; but in these cases it is evidently of especial importance, as Trousseau urges, to keep the patient under observation and prolonged systematic treatment.]

Visual Disturbances in Acromegaly.—W. A. HOLDEN (New York) states that nearly two hundred cases of acromegaly have been reported, and that visual disturbances have been noted in about one-half of them. In over 50 per cent. of these there has been concentric contraction of the visual field, with diminution of central acuteness of vision. In somewhat less than 50 per cent. there has been bitemporal hemianopsia, absolute or for colors only, with or without some contraction of the nasal halves of the fields. In half a dozen cases there has been homonymous hemianopsia, absolute or for colors only, and in one case there was found binasal hemianopsia.

There is no special time for the appearance of visual symptoms. These come on, occasionally, soon after the enlargement of the extremities is noticed, but usually not until years after, and the disease may exist for ten or fifteen years without the appearance of any visual disturbance whatever.—*Archives of Neurology and Psychopathology*, v. iii.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA,

AND

MILTON B. HARTZELL, M.D.,

INSTRUCTOR IN DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

Monilethrix.—E. WOOD RUGGLES (*Journal of Cutaneous and Genito-urinary Diseases*, November, 1900) reports a case of this rare affection of the hair, characterized by a nodose or beaded condition, resulting in baldness of the invaded area, whether on the scalp or other portion of the body. In this affection there exist alternate enlargements and contractions of the

hair-shaft, the enlargements or nodes being long and spindle-shaped, causing marked variations in the diameter of the hairs. The most plausible theory as to its etiology is that it is a trophoneurosis, no bacteria being found. McCall Anderson found fourteen cases in five generations, and Sabouraud seventeen cases in five generations. In the present case the legs (both surfaces) were the seat of the disease, the patient being a man, aged thirty-six years.

Carcinoma Hemorrhagica Developed on a Nævus Vasculosus.—DUBREUILH and ROCHER (*Journal de Méd. de Bordeaux*, June 10, 1900) record the case of a woman, aged fifty-four years, who four years before began to show progressive degenerative changes in a nævus that had previously remained quiescent. A hemorrhagic tumor gradually occupied the former simple nævus, which on extirpation was found to be composed of polymorphous cells, with large, oval nuclei and a finely granular protoplasm.

Variations in the Elimination of Urea in Dermatitis Herpetiformis.—HARDOUIN (*Annales de Dermatologie et de Syphiligraphie*, 1900, No. 11), as the result of his observations, concludes that there is a constant relationship between the variations in the excretion of urea and the eruptive outbreaks undergone by the patient with dermatitis herpetiformis (painful polymorphous dermatitis). The attacks always take place after a period of hypoazoturia, and always coincide with a considerable increase in the elimination of urea, although this increase may have already begun before the outbreak or may be the immediate sequence of it. The author offers no explanation of this relationship, believing that new observations are necessary before forming any definite conclusions.

Epicarin.—PFEIFFENBERGER (*Dermatologische Zeitschrift*, December, 1900), who has employed epicarin in more than fifty children, from one to fourteen years of age, has found it a most valuable remedy in scabies and prurigo. In the former the effect was always prompt, a cure being obtained without any irritation, even in the severest cases, after five or six inunctions. The annoying itching disappeared in most cases after the first rubbing, and the average duration of treatment was less than nine days. In prurigo the action of the remedy was quicker and more certain even than in scabies, the itching disappearing with the first inunction and the papules vanishing with the desquamation which followed. The following formula was used: Epicarin, 7; cret. alb., 2; vaselin, 30; lanolin, 15; axung. porc., 45.

A New Case of Protozoic Dermatitis.—D. W. MONTGOMERY (*British Journal of Dermatology*, October, 1900) reports the following interesting case: A man, aged twenty-one years, entered the German Hospital of San Francisco apparently suffering from pulmonary consumption. His disease began with cough seven or eight months previous to his entrance into the hospital. The skin lesions, the first of which appeared over the right eye, began as dark red, circumscribed nodules, with purulent tops. The tops ulcerating, ulcers with overhanging, ragged edges formed with dirty, uneven floor, covered by a scab. The nodules, which became quite large, projected

well out from the skin and were constricted at the base, resembling the lesions of mycosis fungoides and those occasionally seen in iodide of potassium poisoning. They caused no particular discomfort nor were they tender upon pressure. The lesions were situated upon the scalp, face, arms, neck, buttocks, and thighs, and numbered between twenty-five and thirty. Microscopical examination of an excised tumor showed coccidioid micro-organisms in great numbers. The patient dying two months later, autopsy disclosed numerous large abscesses in the neck, subcutaneous tissues over the chest, in the pleural cavity, and the lung, all communicating with one another. In the pus of these abscesses coccidia-like bodies were easily demonstrable. The lesions were composed of granulation tissue with giant cells and numerous small abscesses. The micro-organisms were found in the giant cells and scattered free in the granulation tissue, but very rarely in the abscesses. Inoculation of a rabbit was without result.

Sapolan.—MRACEK (*Archiv für Dermatologie und Syphilis*, Band liii., Heft 2 and 3), at a recent session of the Vienna Dermatological Society, introduced a new remedial agent for the treatment of diseases of the skin under the name of sapolan. It is composed of 2.5 parts of a specially extracted and fractionally distilled naphtha product, 1.5 parts lanolin and 3 to 4 per cent. soap, for the purpose of giving it consistency. Employed in five cases of acute eczema, recovery took place in from three to six days; in two cases of chronic eczema rapid improvement occurred after its use. In two cases of senile pruritus the itching was immediately relieved and a cure took place in two to three weeks. It was also successfully employed in impetigo contagiosa, scabies, ecthyma, and urticaria.

The Tuberculides.—T. COLCOTT FOX (*British Journal of Dermatology*, November, 1900) makes a full investigation of this subject, based on the existing literature and his own experience, and concludes that although the pathogeny of these eruptions is not yet placed on a firm basis, yet there exists evidence, both positive and exclusive, pointing to their tuberculous origin; they are not the result of a cachexia or a secondary change arising on a soil prepared by tuberculous infection. The toxinic theory (as propounded by Hallopeau) may be excluded, and in this connection it may be noted that tuberculous eruptions are rare in cases of phthisis—cases in which one would expect to note toxins circulating in the blood. In syphilitic eruptions analogous in many respects to the tuberculous cutaneous manifestations occur regularly as a part of the general infection; but in tuberculosis a systemic infection with bacilli is less frequent: the tuberculous infection has a far greater tendency to remain local.

The Bacteriology of One Form of Eczema.—WHITFIELD (*British Journal of Dermatology*, November, 1900), confining his investigations to a single form of eczema, viz., that commonly known as dry eczema (seborrhœa sicca), found in all of twelve cases examined bacteriologically a coccus of variable size, usually occurring in pairs, the cocci joined by their long axes, resembling gonococci; it also occurred in groups and in short chains. This coccus grew freely upon gelatin, which it did not liquefy, producing a wax-

like streak with slightly crenated edges, at first grayish-white in color, later becoming yellow in some cases, in others remaining of the original grayish-white color. On agar the white growth was indistinguishable from the staphylococcus pyogenes albus. On potato the growth was abundant and slimy. The organism was readily stained by the Weigert-Gram method. Although obtained in a pure culture in one instance, it was usually associated with various other organisms. Inoculation experiments upon the author's own person failed to produce more than a trifling disturbance of the horny layer, which healed immediately. The author does not believe the presence of this organism accidental, but thinks a certain predisposition is necessary in order to establish itself. It corresponds almost exactly with the staphylococcus cereus, albus and flavus, and also appears to be identical with the micro-organism found by Merrill in seborrhœic eczema.

An Outbreak of Herpes Zoster.—C. DOPTER (*Gazette des Hôpitaux*, December 5, 1899) records an instance where a slight epidemic of sore-throat occurred in a regiment of soldiers, in several of which cases there appeared herpes zoster, two officers who occupied the same sleeping room being affected, one with intercostal and the other with femoral herpes zoster.

Cutaneous Affections Occurring in the Course of Graves' Disease.—S. E. DORE (*British Journal of Dermatology*, October, 1900) first calls attention to abnormal pigmentation, practically much like that met with in Addison's disease, the writer reporting a case in which the lesions of the skin were at first looked upon as being lichen planus and then as vitiligo. [It is to be noted in Graves' disease that the pigmentation occurs chiefly as an excess of the normal pigment of the body.] The writer also calls attention to the existence of trophic changes in the skin and its appendages, hyperidrosis, erythematous eruptions, œdema, and other conditions resembling eczema, acne, etc. Vasoconstrictors, especially digitalis and ergot, are considered valuable remedies.

Vegetative Dermatitis of Nurslings.—PERRIN (*Annales de Dermatologie et de Syphiligraphie*, 1900, No. 10), under the above title, describes three cases of an unusual cutaneous affection observed in nursing children. The disease consisted of plaques of a deep red, sharply limited, more or less regularly rounded, and decidedly elevated above the neighboring parts. They presented a vegetating surface, and were formed by the union of small papulo-pustules. These plaques varied in size from a twenty-centime piece to a two-franc piece, and were situated upon the face, the wrists (usually the extensor surface), and upon the external surfaces of the thighs and legs. The skin around them presented no alteration. In all the cases observed the infants seemed to be otherwise in good health, but in every instance were the subjects of a more or less abundant seborrhœa of the scalp. The disease was an acute one, lasting from fifteen days to three weeks, the duration depending upon whether it was treated or not. Under treatment it rapidly disappeared. Bacteriological examination showed the presence of yellow and white staphylococci, a small bacillus, and a small coccus. The possibility of the drug origin of the lesions was excluded.

Scarlatiniform Erythema of Parasitic Origin.—PASCAL (*Annales de Dermatology et de Syphiligraphie*, 1900, Nos. 8 and 9) reports a number of cases of scarlatiniform eruption occurring in soldiers employed in sifting barley. The eruption was most marked upon the uncovered parts of the body, such as the hands, the forearms, the face, and especially the neck. It was accompanied by severe itching and burning, and in one case some degree of fever was present for the first twenty-four hours. More or less abundant desquamation followed. The affection was found to be due to the irritant dust arising, during the sifting of the grain, from innumerable small butterflies which covered the barley.

The Nature of the So-called Angioneuroses of the Skin.—TÖRÖK (*Archiv für Dermatologie und Syphilis*, Band liii., Heft 2 and 3) concludes, from his own investigations and those of others, that all those characteristics by which one distinguishes certain changes of the skin as angioneurotic in contradistinction to inflammatory changes are not proof against careful criticism. A careful examination of the changes occurring in the skin in urticaria, in erythema multiforme, and in erythema nodosum leads one to include them among the simple inflammations.

A Tumor of Sarcomatous Appearance Produced by Multiple Foreign Bodies.—DUBREUILH and VENOT (*Annales de Dermatologie et de Syphiligraphie*, 1900, No. 10) report a case of tumor, situated upon the first phalanx of the right index finger, which followed a wound produced by a piece of oyster-shell. The tumor was the size and shape of an almond and only slightly painful on strong pressure. It was quite soft and fluctuating, but upon puncture nothing but a few drops of blood escaped. A diagnosis of myxosarcoma was made and excision practised. Upon microscopical examination the neoplasm was found to be composed of young connective tissue divided into unequal and irregular lobules, which contained numerous small abscesses. In a certain number of these abscesses numerous small foreign bodies were present, which proved on examination to be fragments of oyster-shell. A certain number of giant cells were observed containing from ten to fifty peripheral nuclei and in some cases a minute fragment of oyster-shell. The authors refer to a somewhat similar case reported by Spitzer.

OTOLOGY.

UNDER THE CHARGE OF
CHARLES H. BURNETT, A.M., M.D.,
AURAL SURGEON, PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

Ozænous Complications of the Ear.—P. LE CROIX (*Ann. des Mal. de l'Oreille*, etc., November, 1899) has observed in a series of 42 patients affected with ozæna the ear more or less diseased in 30. Most of the ear affections were ambilateral, and consisted in chronic catarrhal otitis media.

Thyroid Treatment of Chronic Deafness.—Influenced by the recommendations of the use of thyroid in the treatment of so-called chronic catarrh of the middle ear, as set forth in the writings of Vulpius, Ewald, Bruhl and Alt, A. BRUCK (*Arch. of Otol.*, October–December, 1899) tried this drug in 40 cases, varying in age from eighteen to forty-eight years. He used the tablets of Merck, and of Wellcome and Burroughs, giving 0.10 gramme three times daily. Thyroidism occurred in 1 case after a few days of this treatment. In 2 others one dose of 0.30 gramme produced thyroidism, and in 1 case, a corpulent woman, one or two doses produced such profound thyroidism that all treatment was stopped permanently. Bruck concludes: "Personally, I must say that from the employment of thyroid, no matter for how long a time, I have not yet seen a single case of positive improvement in the hearing."

Primary Inflammation of the Mastoid Process.—T. HEIMAN (*Ann. des Mal. de l' Oreille*, November, 1899) after reviewing a number of cases of so-called primary inflammation (periostitis, osteitis, etc.) published by both older and more modern writers, and also recording several cases in his own practice that might have been called by other observers primary mastoiditis, but which he considered as entirely secondary products, concludes that "primary mastoid periostitis is, without doubt, a disease appearing very *rarely* under a distinct clinical form. Primary osteitis of the mastoid exists theoretically, but all those that report its occurrence consider it as an exceptional disease, it being admitted that the cases heretofore described as such a disease rest on error in diagnosis, and that aurists of authority doubt its existence." So far as concerns Heiman's own observations in a large number of patients, he has been unable to find one single case which he could, without hesitation, say was one of true primary mastoid osteitis, and he asserts that from his experience primary mastoid osteitis does not exist. Cases heretofore diagnosed as such a malady were in reality secondary to disease of the external or of the middle ear.

So-called Dangerous Temporal Bones.—L. KATZ (*Archiv. f. Ohrenh.*, November 20, 1899) calls attention again to the fact, also pointed out by L. Trautmann (1898), that "when the angle formed by the mastoid surface and the posterior wall of the external auditory canal is obtuse, the sinus lies far forward," and is in danger of being wounded in mastoid operations. The more obtuse the angle the further forward lies the sinus.

Epidemic Cerebro-spinal Meningitis with Ambilateral Purulent Otitis Media.—S. VON STEIN (*Archives of Otology*, October–December, 1899) has reported a case of epidemic cerebro-spinal meningitis with ambilateral purulent otitis media in a child of five years, in which both mastoids were trephined and the transverse sinuses exposed and explored by aspiration. The mastoids were filled with "stringy mucus and pus," but the sinuses were free from pus or thrombus. Recovery in all respects occurred in the course of a month. The purulent oitis media in this case may be regarded as part of the intercurrent acute bronchitis. We cannot agree with the opinion advanced by Von Stein, that "possibly in the future the mortality of such cases (cerebro-spinal meningitis), which yield to no other treatment, may

be materially reduced by early opening of the cerebral cavity," nor that "perhaps bilateral opening of the mastoids in typical cerebro-spinal meningitis will act as thoroughly as opening the abdominal cavity in tuberculosis." In our opinion this child recovered from cerebro-spinal meningitis in spite of the mastoid operations and not in consequence of them.

Cold in Acute Otitis and Mastoiditis.—J. O. TANSLEY (*Transactions of the American Otological Society*, July, 1899) is opposed to the use of cold in acute otitis media and in acute mastoiditis, as it may dull the pain too thoroughly and act as a mask of the true state of disease in these parts, thus leading to delay in performing needed operations.

Mastoid Operations.—A. LUCÆ (*Archiv. f. Ohrenh.*, November 20, 1899), while admitting that in many cases he has by the mastoid operation in its various forms cured chronic suppurations in which all other methods failed, also is assured that, after four years' experience in many thousands of cases, he has cured many cases of chronic suppuration of the ears with irrigation with formalin solution (1–1000) in warm water that otherwise would have required a mastoid operation. Furthermore, if a faithful trial of formalin fails to cure a chronic otorrhœa, Lucæ considers such a failure as an indication for a mastoid operation. He believes one should be prouder of saying, "I have cured so many cases of otorrhœa without operation," than of saying, "I have performed so many mastoid operations for the cure of purulent otitis media."

Excision of Ossicles.—GRUNERT and ZERONI (*Archiv f. Ohrenh.*, August 3, 1899) maintain, rightly, we think, that excision of the hammer and incus for the cure of chronic purulent otitis media has been unjustly superseded to a great degree by the so-called radical operation on the antrum and mastoid. Observation of a large number of patients has led them to conclude that excision of diseased ossicles will usually cure the chronic purulency and prevent mastoiditis and its sequelæ, and they have frequently been called upon to perform mastoid operations that would never have been needed if excision of the ossicles by way of the auditory canal had been performed in time.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

F. B. MALLORY, M.D.,
ASSISTANT PROFESSOR OF PATHOLOGICAL ANATOMY, HARVARD UNIVERSITY.

On the Growth of Carcinomata of the Skin and Mucous Membranes.—LOHMER (*Ziegler's Beiträge*, 1900, xxviii., 372).

The theory that carcinomata arise by the epithelium growing down into the underlying tissues rests chiefly on the works of Thiersch and Waldeyer, and for many years this view has been generally accepted. Recently, how-

ever, the histogenesis of carcinoma has become the subject of much discussion, owing to a theory advanced by Ribbert that carcinoma does not owe its origin primarily to an increased proliferative energy of epithelial cells, which enables them to invade connective tissue, but to a separation of a group or mass of epithelial cells from their normal relations. This separation, according to him, is due chiefly to a growth of connective tissue which surrounds and cuts off some of the epithelial cells, which then, after their separation, acquire the proliferative power of carcinoma cells.

This theory of Ribbert's has met with a good deal of opposition, partly because it does not agree with the view held by most investigators that there occurs a primary morphological and biological change in the epithelial cells which renders them capable of malignant growth; partly because it is not in harmony with the interpretation heretofore put on a whole series of the most different histologic carcinoma—preparations which have been looked upon as typical pictures.

These pictures and the interpretation of them recur in nearly all of the publications directed against Ribbert's views. The most important of them are the so-called "transition pictures," namely, what is seen at the edge of young and old carcinomata, where the normal epithelium merges, without any distinct line of demarcation, into the fully developed carcinoma.

Ribbert defends his position by claiming that false conclusions have been drawn from these pictures. He interprets them otherwise: The carcinoma may have developed in the middle of a papillary tumor or of an adenomatous polyp—such a combination is not so very rare—or the pictures seen may be due to the growth of the connective tissue leading to papillary projections of the skin and to modifications of glands of mucous membrane; a third interpretation is that the tumor, which grows not only downward and laterally, may also grow upward and become joined to the epithelial covering; in such cases it would look as though the surface epithelium had grown downward. This latter point is unquestionably true, and is accepted by all writers.

Lohmer examined twenty-three carcinomata of the skin and a number from mucous membranes, many of them by means of serial sections. On the basis of his own work and that of others he strongly opposes Ribbert's theory. Eight carcinomata of the lip, for example, showed a marked downward growth of the epithelium, in most cases to the muscle layer. As a rule, it extended as broad, thick masses into the connective tissue. In seven of the cases there was a gradual merging of the normal epidermis into the tumor. In all of these cases a secondary junction of the normal downward projections of the epidermis with extensions of the tumor could be ruled out, as could also the assumption that the carcinoma developed in the middle of a papilloma or that the epithelial processes were stretched by a growth of connective tissue. The writer believes that the infiltration of the cutis with round cells is secondary, and follows the changes due to the epithelial invasion.

In carcinomata of the mucous membranes he found an upward growth of the tumor and union with the epithelium rather more frequent than in carcinoma of the skin.

The writer believes that Ribbert's theory does not fit all cases, because in the greater number of the carcinomata which he examined a direct growth

of the tumor into the depths and a spread at the periphery could be demonstrated. Long, branching masses of epithelium could be followed without any break from the surface epithelium directly into the underlying connective tissue. At its periphery the tumor spreads by gradual involvement of the neighboring epithelium, which then grows directly downward into the underlying connective tissue. It is necessary to return, therefore, to the assumption that the starting-point of a carcinoma is to be found in a primary proliferative energy of epithelial cells. The cause of this proliferative energy is still unknown.

Gland-like Carcinoma of Epidermic Origin.—KROMPECHER (*Ziegler's Beiträge*, 1900, xxviii., 1).

Braun, in 1892, described certain tumors of the skin which differed clinically and histologically from the ordinary epidermoid carcinomata, and which, according to him, could not be derived from the glandular structures of the skin. He declared them to be endotheliomata.

According to Krompecher, the diagnosis of endothelioma can be made only when the origin of the tumor masses from the lymph endothelium of the larger lymph spaces can be directly followed or when a carcinoma-like tumor is found in places such as bone and lymph nodes, where epithelium is lacking and the structure of the suspicious tumor corresponds to that of tumors already firmly established as endotheliomata.

Braun was not able to demonstrate the origin of the tumors from endothelial cells, and the histological picture does not at all correspond to the picture of proved endotheliomata. He based his diagnosis on the difference of structure as compared with ordinary epidermoid carcinomata, on the absence of epithelial pearls, and especially on the lack of any connection between the tumor and the skin.

Krompecher believes that these tumors are not endotheliomata, but carcinomata. He bases his arguments and opinions on a study of thirty-three cases, of which twenty-one are described in detail. The tumors were derived from cheek, forehead, breast, eyelid, nose, back, tongue, cervix uteri, lumbar region, and ear.

In fourteen of the twenty-one cases he was able to demonstrate by means of serial sections the connection of the tumors with the surface epithelium and thereby prove their epithelial character.

The striking feature of these tumors is their microscopical structure. While the epidermoid carcinoma is composed of the cylindrical cells of the stratum Malpighii and of polygonal prickle cells, which by cornification give rise to the epithelial pearls, the group of tumors under consideration is distinguished by the fact that only the cylindrical layer of the stratum Malpighii grows; the epithelial cells constantly retain their embryonic character, and the nests of tumor cells consist simply of long, cylindrical cells, which stain intensely. Under a high power such a tumor often looks strikingly like a spindle-cell sarcoma. Inside of the cell nests no cornification or formation of epithelial pearls can be found.

The microscopical picture of these growths varies greatly according as the cells grow as solid masses, in narrow "meandering" ribbons, or lining canals and cysts. Combinations of these various forms occur with each

other and also rarely with the ordinary form of epidermoid carcinoma. The writer recognizes six different types, but it is not necessary to consider them in detail here.

Secondary degeneration of the connective tissue stroma is frequent and quite characteristic. The degeneration may be hyaline or myxomatous.

Krompecher believes that the gross and microscopical appearances and clinical features of this class of tumors are sufficiently peculiar and characteristic to establish them as a separate group of carcinomata, to which he gives the name "carcinoma epitheliale adenoides."

Suppurative Myelitis in a Case of Bronchiectasis.—CHIARI (*Zeitschrift f. Heilkunde*, 1900, xxi., 351) sums up the brief literature of suppurative myelitis, and adds a case which came under his observation. But fourteen cases in all have been published: of these, three were traumatic in origin, and three were due to direct extension from lesions outside the cord. Of the remaining eight cases, three occurred as metastatic lesions in cases of bronchiectasis.

In the case reported by the writer, beside meningitis of the brain and cord, abscesses filled with thick yellowish-green pus were found in the cerebellum and in three different parts of the cord.

In the lower lobes of the lungs were numerous bronchiectatic cavities up to the size of hazel-nuts, and the bronchi showed numerous cylindrical dilatations.

Coverslip preparations from the pus in the abscesses and in bronchiectatic cavities showed the micrococcus lanceolatus, and the same micro-organism was obtained in cultures.

Sections through the wall of the abscesses in the cerebellum and in the cord showed, however, beside the micrococcus lanceolatus, numerous clumps of fine, branching threads which stained by Gram; they lay partly within bloodvessels, partly in the perivascular lymph spaces. The micro-organism was evidently a streptothrix and closely resembled the actinomyces. It was not obtained in the cultures. Evidently it had reached the nervous system metastatically from the bronchiectases through the circulation.

The case suggests, the writer thinks, that it would be well to examine the bacteria present in cases of bronchiectases; the actinomyces may be found because such a large proportion of the cases of myelitis are associated with bronchiectasis, and because the actinomyces is the micro-organism which seems most frequently to give rise to metastatic lesions in the central nervous system.

In favor of this view the writer mentions a second case of his in which there were both bronchiectasis and abscess of the brain with secondary suppurative meningitis. Both in the bronchiectatic cavities and in the abscess of the brain a streptothrix was found resembling in all respects the micro-organism of the case reported.

Internal Pachymeningitis.—MELNIKOW-RASWEDENKOW (*Ziegler's Beiträge*, 1900, xxviii., 217).

Jores and his students have claimed that idiopathic pachymeningitis is a pathological process which has its seat in the capillary layer, perhaps also in

the bloodvessels generally, of the dura, and which gives rise to a new formation of capillaries and to constantly recurring hemorrhages.

As this is contrary to the generally accepted view, the writer reinvestigated the subject. He studied, first, the normal structure of the dura, using particularly Weigert's elastic tissue stain. In the inner of the two layers of the dura could be distinguished from within out: 1. A single layer of epithelium, which covers the inner surface. 2. A hyaloid, fenestrated, elastic membrane, which varies much with age and with the individual; it is absent at birth, is well marked in early adult life, and is thick in old age. 3. The inner capillary network. 4. A layer of connective tissue mixed with elastic fibres. According to the results of histological and embryological investigations, the dura mater is a peculiar formation and has nothing in common with the pleural and peritoneal serosæ.

The writer then studied twelve cases of pachymeningitis. Of these, three only showed proliferation of the epithelial cells on the inner surface of the dura, with some exudation of fibrin and leucocytes. The important point was that the process occurred on the surface of the internal elastic membrane. Later, organization of this exudation takes place; thin-walled capillaries grow out from the capillary layer through spaces in the internal elastic membrane.

It is characteristic of this process for hemorrhages to take place from these newly formed bloodvessels; they often burst, and then the blood pours out into the delicate, loose connective tissue. The exuded blood is rapidly absorbed, as is shown by the numerous pigment masses of various sizes. The pigment lies partly in cells, partly out of them, and is heaped up especially around the bloodvessels in the deeper layers close to the limiting elastic membrane.

There may be repeated hemorrhages; then there are several layers of connective tissue showing different stages of development; the oldest is next to the internal limiting membrane.

The general view that the pathological process is an inflammation, with hemorrhage following as a complication, is accepted by the writer. The less accepted view of a hemorrhage on the surface of the dura followed by inflammation may occasionally be true.

In the origin of pachymeningitis in man toxæmias play an important part. They produce the histological changes in the dura, in consequence of which the peculiar inflammatory process develops.

The Pigment in Brown Induration of the Lungs.—NEUMANN (*Virchow's Archiv*, 1900, vol. clxi., p. 422) has recently been investigating the question whether the well-known yellow to reddish-brown pigment which occurs in the lung in chronic passive congestion, and which gives the iron reaction, can lose this power to give the iron reaction and change to a melanotic pigment. The problem was taken up because the results obtained by various investigators of this subject do not agree.

In his investigations Neumann found along with carbon, which is never lacking, only one other pigment, and that differed in no way from the hemosiderin which arises in other parts of the body from extravasations. It has a more or less saturated yellow, yellowish-brown, or reddish-brown

color, without any gray, blackish, or black tinge; often it appears colorless, or at least of an extremely pale yellow, and it always gives a strong iron reaction.

Examination of fresh tissues is advised; but tissues hardened in alcohol or in Müller's fluid give good results. Artificial stains are for the most part unnecessary and in part disadvantageous. It is best to compare parts of the lung which macroscopically show no carbon with other parts containing much of it. Where carbon is wanting the usual masses of hemosiderin are found, chiefly within the large "heart-failure cells" in the alveoli. Where much carbon is present the masses of pigment are darker in color, and lie mostly in the connective tissue stroma; the low power of the microscope shows all transitions from yellow hemosiderin to black carbon. High power shows that each dark pigment mass consists of a central black nucleus surrounded by a yellowish mantle of varying thickness. The unquestionable interpretation of these masses is that they are particles of carbon surrounded by hemosiderin. In this way arise the pigment granules first described by Virchow and later forgotten, namely, one-half or one-third black and the rest yellow or red.

Against the view that these central black bodies are due to a secondary melanotic change of the substance of the hemosiderin, he urges the facts that the dark nuclear formations are usually sharply limited at the periphery and show no zone of transition, and that several dark nuclei may lie within one pigment mass.

He believes that the retrograde changes in the pigment, instead of beginning in the middle of a mass and proceeding outward, begin at the periphery, and he regards the colorless border around the carbon particles as the last stage in the metamorphosis of the hemosiderin.

He believes, further, that the hemosiderin is deposited on the carbon from hæmoglobin in solution, and that red-blood globules cannot turn to yellow and brown granules without solution taking place.

The Histological Changes in Striated Muscle Adjoining Malignant Tumors.—FUJINAMI (*Virchow's Archiv*, 1900, clxi., 115) studied the effects produced on muscle-tissue by twenty sarcomata and seventeen carcinomata.

In general the two classes of tumors may be said to invade muscle-tissue in much the same way. They may infiltrate between the separate muscle-fibres, they may press against them as a mass, or they may be separated from the fibres by bands of connective tissue, thus affecting the muscle-fibres indirectly only.

The infiltration takes place not only through the tissue spaces and the lymph and bloodvessels, but also through the sarcolemma sacs. This invasion of the sarcolemma sac and extension through it is much more common with carcinoma than with sarcoma. It is especially marked where the infiltration of the muscle is parallel with the muscle-fibres. With the sarcomata it has been observed only in the round-cell variety. The invasion or non-invasion by the tumor-cells of the sarcolemma sac depends on the biological relation of the tumor-cells themselves, on the direction of their growth, and on the nature of the changes in the muscle-substance.

The changes which take place in the muscle-fibres as the result of the invasion of muscle tissue by the tumor are manifold. All the possible degenerative changes which occur in the various lesions of muscle may be present, and they may occur very irregularly in the individual fibres. The commonest form is simple atrophy, but the most interesting are (*a*) the multiplication of the nuclei, (*b*) the irregular or ampullar atrophy, and (*c*) the formation of giant-cells.

(*a*) Ordinarily the muscle nuclei disappear as the muscle-fibre atrophies. In other cases, however, they appear very active, increasing greatly in number (the writer counted 153 in one fibre), chiefly, perhaps exclusively, by direct division. They may form single or double rows, or (*c*) may collect in clumps which on cross section appear like giant cells.

(*b*) Sometimes the tumor cells press against the side of the muscle-fibres causing irregular atrophy which gives an ampullar or beaded appearance to the muscle-fibres.

One point to be insisted on is that all the changes which occur in regenerating muscle, and which are looked upon as regenerative in nature, occur practically in the same form at the periphery of a malignant growth where there can be no question of regeneration. Apparently the muscle-fibre can show at a certain stage of regressive change an appearance similar, or nearly similar, to that seen at the beginning of its development; it is necessary, therefore, to guard against judging from microscopical examination only whether regeneration or degeneration is present.

In many cases there occurs at the edge of the tumor, as the result of reaction on the part of the tissues, a change in the interstitial tissue of the muscle due to round-cell infiltration, growth of the connective tissue, and growth of the intima of the vessels. These all exert an effect on the muscle-fibres. A round-cell infiltration of the perimysium at the edge of the tumor is, as a rule, more frequent and more marked with carcinoma than with sarcoma.

Two conclusions drawn by the writer cannot be accepted without further proof, namely, that cell formations may arise from altered muscle-fibres and take part in the formation of tumor-cells, and that the muscle-fibres may be converted into connective tissue.

Notice to Contributors.—All communications intended for insertion in the Original Department of this Journal are received only *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from abroad written in a foreign language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form will, if desired, be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. FRANCIS R. PACKARD, 1831 Chestnut Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 34 Upper Brook Street, Grosvenor Square, London, W., England.

CONTENTS.

ORIGINAL COMMUNICATIONS.

PAGE

The Protozoon of Cancer. By HARVEY R. GAYLORD, M.D. 503

1. Thoracic Aneurism. 2. Carcinoma of Superior Maxilla. 3. Cholelithiasis and Suppurative Cholecystitis 4. Inguinal Hernia of (*a*) Bladder; (*b*) Cæcum. By BERN B. GALLAUDET, M.D. 539

The Carbohydrates of the Urine in Diabetes Insipidus. By DAVID L. EDSALL, M.D. 545

Conclusions Based upon Three Hundred and Thirty Outbreaks of Infectious Diseases Spread through the Milk-supply. By GEORGE M. KOBER, M.D. . . 552

Laryngeal Hemorrhage from an Apparently Normal Larynx. By GEORGE B. WOOD, M.D. 557

Blastomycetic Dermatitis of the Gluteal Region. By FREDERICK G. HARRIS, M.D. 561

Subinvolution of the Uterus; Three Suggestive Cases. By L. W. ATLEE, M.D. . 564

REVIEWS.

The Technique of Surgical Gynecology. By Augustin H. Goelet, M.D. . . 575

The History of Medicine in the United States. By Francis Randolph Packard, M.D. 576

Therapeutics: Its Principles and Practice. By Horatio C. Wood, M.D., LL.D. . 578

A Practical Treatise on Materia Medica and Therapeutics. By John V. Shoemaker, M.D., LL.D. 578

Text-book of Practical Therapeutics. By Hobart Amory Hare, M.D., B.Sc. . . 578

Mental Affections. By John MacPherson, M.D., F.R.C.P.Eng. 580

Atlas and Epitome of Diseases Caused by Accidents. By Dr. Ed. Golebiewski . 582

Manual of Diseases of the Eye. By Charles H. May, M.D. 583

A Treatise on Appendicitis. By John B. Deaver, M.D. 584

PROGRESS OF MEDICAL SCIENCE.

MEDICINE.

PAGE

Perforation in Typhoid Fever . . 585

Disinfection of Typhoidal Excreta . 586

Auto-intoxication 586

Post-hemorrhagic Hæmoglobinuria . 587

Antiphlogistic Action of Cold . . 589

Generalized Tic Convulsif . . . 590

The Freezing Point of the Blood in Typhoid Fever 591

SURGERY.

Compression of the Pedicle of a Movable Kidney 592

On Gonorrhœal Rheumatism . . 593

Intraspinal Cocainization from the Anæsthetist's Stand-point . . 594

Exclusion of the Intestine . . . 595

Cocainization of the Spinal Cord . 596

Subperiosteal Fractures . . . 596

Abortive Treatment of Gonorrhœa . 597

Fracture of the Femur . . . 598

PEDIATRICS.

Staphylococcic Enteritis in Infants . 599

Presence of the Proteus Vulgaris in Stools of Dyspeptic Infants . . 599

Three Varieties of Membranous Angina Produced by Organisms other than the Klebs-Lœffler Bacillus . 600

Hereditary Syphilis 600

A Method of Rendering Cow's Milk Easily Digestible 601

Glandular Fever due to Pneumococci 601

Transmission of Measles from Mother to Fœtus 602

THERAPEUTICS.

	PAGE		PAGE
Diabetes Mellitus and Salol	602	Petroleum and the Treatment of Acute Articular Rheumatism	605
Dyspeptic Glycosuria	603	Treatment of Hepatic Colic	606
Treatment of Diabetes	603	On Tetranitrol	606
Treatment of Insomnia	604	Obesity and its Treatment	606
Morphine and the Stomach	604	Antipyrine in Rheumatism	607
Chloretone	604	Dymal	607
Colloidal Silver as a Specific	605		

OBSTETRICS.

Induced Labor, Symphysiotomy, and Embryotomy	607	Rupture of the Uterus	609
Importance of Bacteria in Vagina as a Source of Puerperal Infection	608	Pernicious Nausea of Pregnancy	609
Advantages of Induced Labor	608	Diagnosis of Ectopic Gestation	610
		Vaginal Cæsarean Section in Treatment of Eclampsia	610

GYNECOLOGY.

Reproduction of Uterine Fibroids	612	Uterine Fibrocyst of Unusual Size	614
Transplantation of the Ovary	612	Treatment of Uterine Hemorrhage	615
Appendicitis and Disease of Adnexa	613	Intestinal Obstruction	615
Fibroma of the Vagina	613	Changes in the Endometrium in Connection with Fibroids	615
Uterine Calculi	613	Torsion of the Fallopian Tubes	615
Endothelioma of the Uterus	614	Torsion of Pedicle and Uterus	616
Vesicovaginal Fistula	614		

OPHTHALMOLOGY.

Toxic Amblyopia from Jamaica Ginger or Methyl Alcohol	616	Quinine Amblyopia	617
		Ophthalmia Neonatorum	618

DERMATOLOGY.

Urticaria the Result of Formalin	619	Melanodermia with Cachexia and Pigmentation of Buccal Mucous Membrane due to Pediculosis Corporis	621
Peculiar Case of Dermographism	619	Treatment of Rodent Ulcer by X-ray	621
Lichen Ruber Pemphigoides	619	Pigmentation of Skin from Drinking Beer Containing Arsenic	621
Psoriasis of Bullous and Rupioid Appearance	620	Finsen's Light Treatment of Lupus and Rodent Ulcer	622
Peruol in Scabies	620	Rodent Ulcer and Epithelioma Contrasted	622
On Ringworm Infection in Man and Animals	620	Epitheliomatous Giant-cells	623
Trophic Disturbances in Mammary Region Produced by X-rays	620		
Alopecia Areata	621		

OTOLOGY.

General Perichondritis of Auricle	623	Mastoiditis from Use of Nasal Douche; Death from Leptomeningitis	625
Excision of the Ossicles	624	Chronic Suppurative Mastoiditis	625
Operations on the Mastoid	624		

HYGIENE AND PUBLIC HEALTH.

Disinfectant Properties of Alcohol	626	Concerning the Anopheles Mosquitoes	626
Tin in Canned Foods	626	Selenium Poisoning from Impure Beer	628